
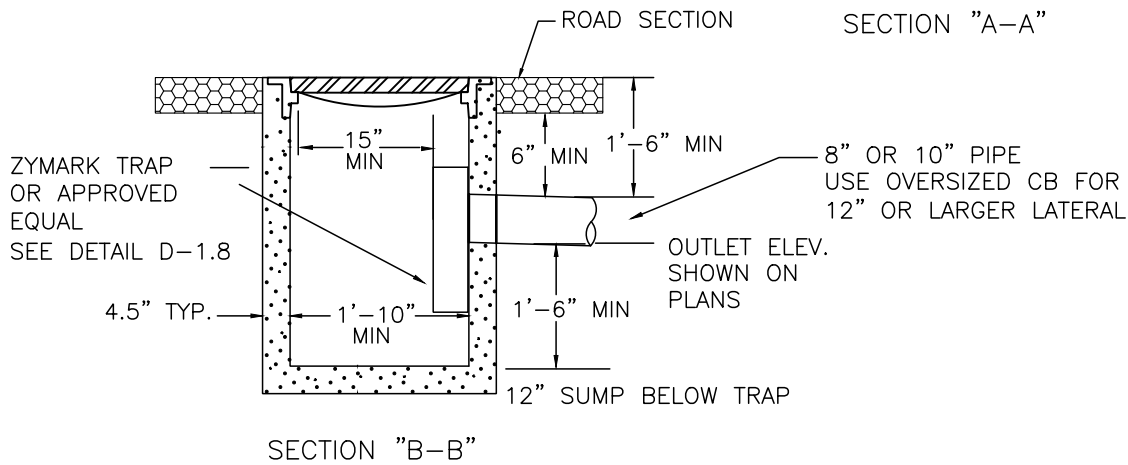
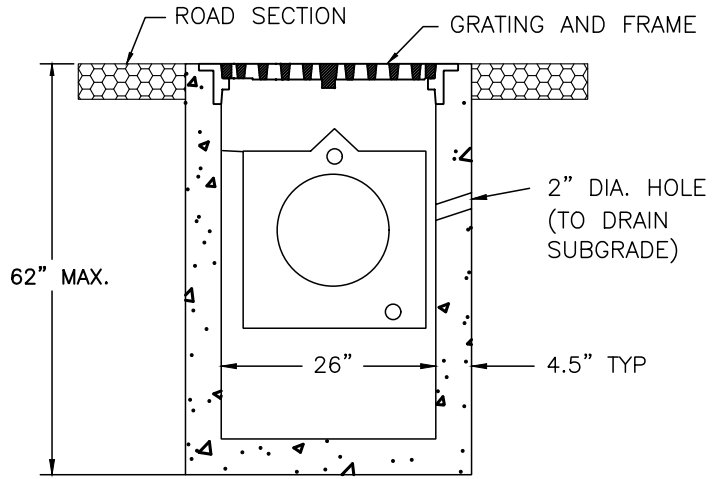
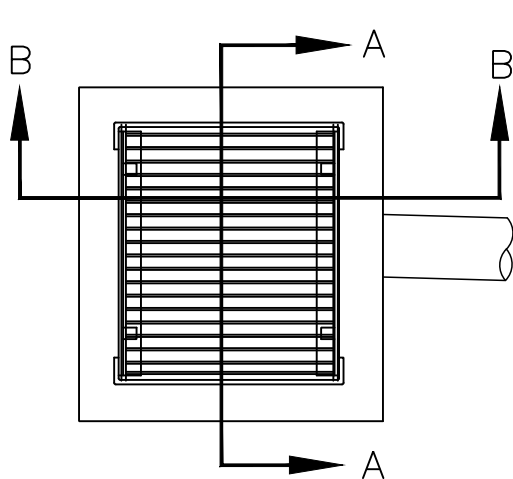


GENERAL STORM WATER CONSTRUCTION NOTES

1. ALL MATERIALS AND INSTALLATION OF STORM SEWERS AND DRAINAGE SYSTEMS SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS IN THE CITY OF VANCOUVER'S LATEST VERSION OF "GENERAL REQUIREMENTS AND STANDARD DETAILS MANUAL" AND THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION CHAPTER OF THE AMERICAN PUBLIC WORKS ASSOCIATION (APWA) AND THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION, WHERE THE CITY OF VANCOUVER GENERAL REQUIREMENTS SHALL TAKE PRECEDENCE. WHEREVER THE STANDARD SPECIFICATIONS REFER TO THE OWNER AS EITHER THE "STATE" OR "SECRETARY" OR WHEN REFERENCE IS MADE TO THE DEPARTMENT OF TRANSPORTATION IT SHALL BE UNDERSTOOD THAT THE STANDARD SPECIFICATIONS SHOULD READ THE "CITY".
2. ALL PUBLIC STORM SEWER AND DRAINAGE SYSTEM CONSTRUCTION IS SUBJECT TO INSPECTION AND APPROVAL BY THE CITY OF VANCOUVER'S DEPARTMENT OF PUBLIC WORKS. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION OFFICE (360) 487-7780 AT LEAST 48 HOURS PRIOR TO THE START OF ANY CONSTRUCTION. THE CITY MAY REQUIRE THAT A PRECONSTRUCTION CONFERENCE BE HELD.
3. THE CONTRACTOR IS REQUIRED TO NOTIFY ALL UTILITIES 48 HOURS PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR MAY CONTACT THE NORTHWEST UTILITY NOTIFICATION CENTER AT 1-800-424-5555 IN LIEU OF CONTACTING INDIVIDUAL UTILITIES.
4. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER AND/OR CONTRACTOR TO PROCURE AND COMPLY WITH THE PROVISIONS OF ALL APPLICABLE PERMITS, EASEMENTS, LICENSES AND CERTIFICATES IN CONJUNCTION WITH THE CONSTRUCTION OF STORM SEWERS AND DRAINAGE SYSTEMS. COMPLIANCE SHALL BE AT ALL LEVELS; FEDERAL, STATE, AND CITY, RELATING TO THE PERFORMANCE OF THIS WORK. THE CONTRACTOR SHALL OBTAIN A STREET CUT PERMIT FOR WORK WITHIN THE PUBLIC RIGHT-OF-WAY.
5. THE CONTRACTOR SHALL OBTAIN AND SUBMIT AN APPROVED TRAFFIC CONTROL PLAN PRIOR TO BEGINNING CONSTRUCTION. THE PLAN SHALL BE APPROVED BY THE CITY TRANSPORTATION DIVISION (360) 487-7735.
6. A REGISTERED PROFESSIONAL ENGINEER, ENGINEERING GEOLOGIST, OR A DESIGNATED REPRESENTATIVE WORKING UNDER THEIR DIRECT SUPERVISION, SHALL OBSERVE THE CONSTRUCTION OF THE INFILTRATION FACILITY AND CONDUCT CONFIRMATION INFILTRATION TESTING ON SOILS EXPOSED AT THE BASE OF THE FACILITY. CONFIRMATION TESTING SHALL TAKE PLACE PRIOR TO INSTALLATION OF THE FACILITY (E.G. PLACEMENT OF DRAIN ROCK, PERFORATED PIPE, DRYWELLS, ETC.) AND SHALL BE CONDUCTED IN ACCORDANCE WITH THE RECOMMENDATIONS OUTLINED IN 6.2 CONSTRUCTION OBSERVATION AND TESTING OF SSWASCE INFILTRATION STANDARDS.
7. THE CONTRACTOR SHALL OBTAIN ALL OFFSITE CONSTRUCTION EASEMENTS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THAT ALL OFFSITE UTILITIES EASEMENTS HAVE BEEN OBTAINED BY THE OWNER PRIOR TO THE COMMENCEMENT OF ANY OFFSITE CONSTRUCTION.
8. THE CONTRACTOR IS TO REPORT ANY SITE DISCREPANCIES IMMEDIATELY TO THE ENGINEER. ITEMS TO REPORT INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
 - EXISTING PIPE SIZE, TYPE, SLOPE AND INVERT ELEVATION
 - ROADWAY CENTERLINE AND TOP OF CURB ELEVATIONS
 - GROUNDWATER ENCOUNTERED WITHIN 5- FEET OF THE BOTTOM OF INFILTRATION FACILITIES.
9. WATER QUALITY DEVICES WILL BE INSTALLED AND FUNCTIONING PRIOR TO COMMENCING WITH INSTALLATION OF PAVEMENT FOR ALL AREAS DRAINING INTO THE WATER QUALITY SYSTEM. BIORETENTION FACILITIES SHALL HAVE BIORETENTION SOIL MIX INSTALLED. MECHANICAL DEVICES SHALL HAVE FILTER MEDIA INSTALLED.
10. ALL NEW CATCH BASINS SHALL BE LABELED WITH "PROTECT WATER * ONLY RAIN IN DRAIN" MEDALLIONS. MEDALLIONS SHALL BE AFFIXED TO DRY SURFACES WITH HIGH QUALITY POLYURETHANE SEALANT AND RIVETS. APPROVED MEDALLIONS ARE AVAILABLE FOR PURCHASE AT THE CITY'S PERMIT COUNTER (360)487-7804.
11. ROOF DOWNSPOUT RUNOFF MUST BE RETAINED ON EACH SPECIFIC SITE. DOWNSPOUTS SHALL NOT DRAIN TO THE STREET OR ANY ADJACENT PROPERTIES UNLESS SPECIFIC APPROVAL HAS BEEN SHOWN ON APPROVED CIVIL ENGINEERING PLANS.
12. THE CONTRACTOR SHALL PROVIDE A TELEVISION REPORT, VIDEOS, AND TABULAR AS-BUILT OF ALL PUBLIC STORM MAINS AND LATERALS PRIOR TO PAVING. THIS TV INFORMATION SHALL BE SUBMITTED TO THE CITY INSPECTOR FOR REVIEW. TV INSPECTION SHALL DEMONSTRATE NO MANUFACTURING OR INSTALLATION DEFECTS, OR ANY DEBRIS IN THE LINES, FOR APPROVAL AND ACCEPTANCE BY THE CITY. FINAL ACCEPTANCE AND CONSTRUCTION OF STORM SEWERS ARE SUBJECT TO SECTIONS 1-05.12, AND 7-04.3 OF THE STANDARD SPECIFICATIONS. PIPE DEFLECTION TESTING MUST BE PER 7-17.3(2)G OF THE STANDARD SPECIFICATIONS AND ITS AMENDMENTS.

 CITY OF Vancouver WASHINGTON	CONSTRUCTION NOTES FOR STORM SEWERS			STORM DETAIL NO. D-1.0	
	CITY OF VANCOUVER DEPARTMENT OF PUBLIC WORKS SURFACE WATER MANAGEMENT	DRAWN BY	APPROVED BY		APPROVAL DATE
		MDH	AR		02-2024
	REVISION	APPROVED BY	APPROVAL DATE		
	-	-	-		



NOTES:

1. LATERALS WILL BE CONSTRUCTED TO ENTER THE BASIN PERPENDICULAR TO THE BASIN WALL. THE LATERAL WILL ENTER ONLY AT THE FRONT OR SIDE OF THE BASIN WITH NO LATERALS ALLOWED TO ENTER THE CATCH BASIN AT THE CORNERS. IF NEEDED, A BEND MAY BE USED AS THE FIRST SECTION OF PIPE OUTSIDE THE BASIN WALL. THE MAXIMUM BEND ALLOWED IS 45 DEGREES.
2. ALL REINFORCED STEEL SHALL HAVE A 1-1/2" CLEAR COVER UNLESS OTHERWISE NOTED, AND SHALL BE GRADE 40 OR GRADE 60 (ASTM A-615).
3. ANY PROTRUDING ENDS OF PIPES SHALL BE TRIMMED FLUSH WITH THE INSIDE WALLS AND GROUTED.
4. THE METAL FRAME AND GRATE SHALL BE SET TO A SLOPE TO CONFORM WITH THE EXISTING OR PROPOSED CURB GRADE AND ROAD CROSS SLOPE.
5. ALL NEW CATCH BASINS SHALL BE LABELED WITH "PROTECT WATER * ONLY RAIN IN DRAIN" MEDALLIONS. MEDALLIONS SHALL BE AFFIXED TO DRY SURFACES WITH HIGH QUALITY POLYURETHANE SEALANT AND RIVETS. APPROVED MEDALLIONS ARE AVAILABLE FOR PURCHASE AT THE CITY'S PERMIT COUNTER (360)487-7804.
6. SEE DETAIL D-1.7 FOR GRATE AND FRAME SPECIFICATIONS.
7. CONCRETE CATCH BASINS ARE REQUIRED FOR ALL CITY PROJECTS.

N.T.S.



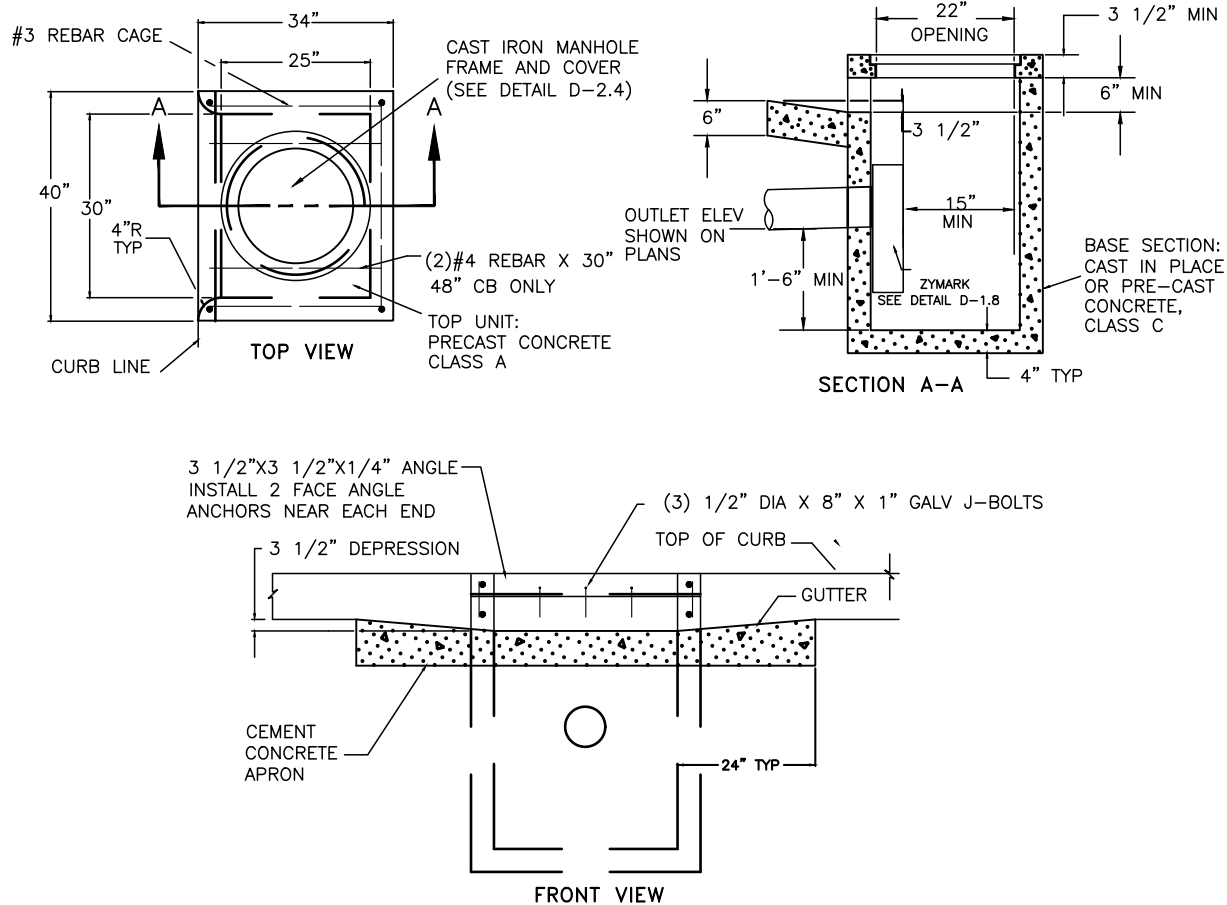
STANDARD CATCH BASIN

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

DRAWN BY	APPROVED BY	APPROVAL DATE
MDH	AR	02-2024
REVISION	APPROVED BY	APPROVAL DATE
-	-	-

STORM
DETAIL NO.

D-1.1



NOTES:

1. LATERALS WILL BE CONSTRUCTED TO ENTER THE BASIN PERPENDICULAR TO THE BASIN WALL. THE LATERAL WILL ENTER ONLY AT THE FRONT OR SIDE OF THE BASIN WITH NO LATERALS ALLOWED TO ENTER THE CATCH BASIN AT THE CORNERS. IF NEEDED, A BEND MAY BE USED AS THE FIRST SECTION OF PIPE OUTSIDE THE BASIN WALL. THE MAXIMUM BEND ALLOWED IS 45 DEGREES.
2. ALL REINFORCED STEEL SHALL HAVE A 1-1/2" CLEAR COVER UNLESS OTHERWISE NOTED, AND SHALL BE GRADE 40 OR GRADE 60 (ASTM A-615)
3. ANY PROTRUDING ENDS OF PIPES SHALL BE TRIMMED FLUSH WITH THE INSIDE WALLS AND GROUTED.
4. ALL NEW CATCH BASINS SHALL BE LABELED WITH "PROTECT WATER * ONLY RAIN IN DRAIN" MEDALLIONS. MEDALLIONS SHALL BE AFFIXED TO DRY SURFACES WITH HIGH QUALITY POLYURETHANE SEALANT AND RIVETS. APPROVED MEDALLIONS ARE AVAILABLE FOR PURCHASE AT THE CITY'S PERMIT COUNTER (360)487-7804.

N.T.S.

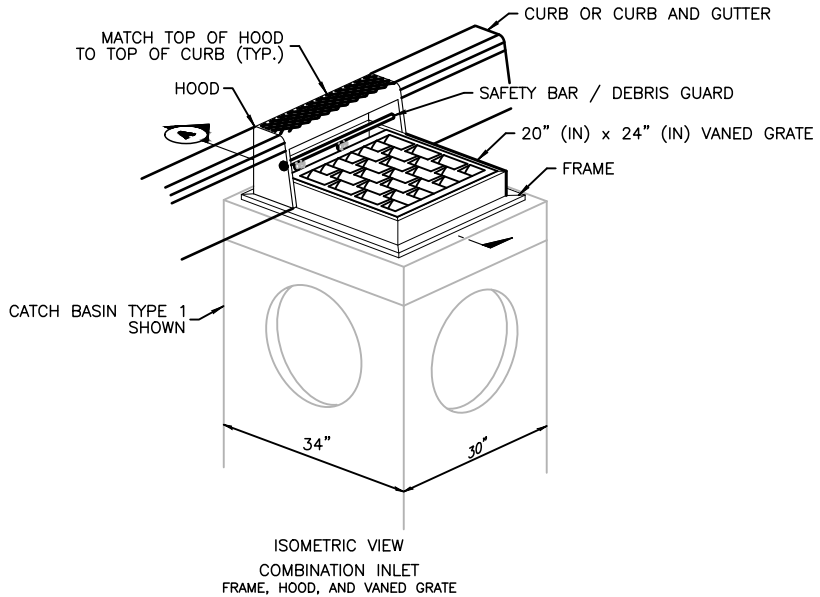
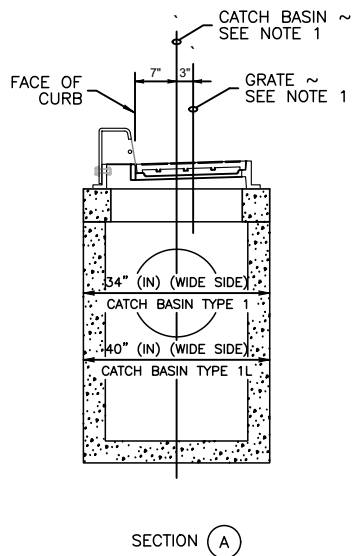
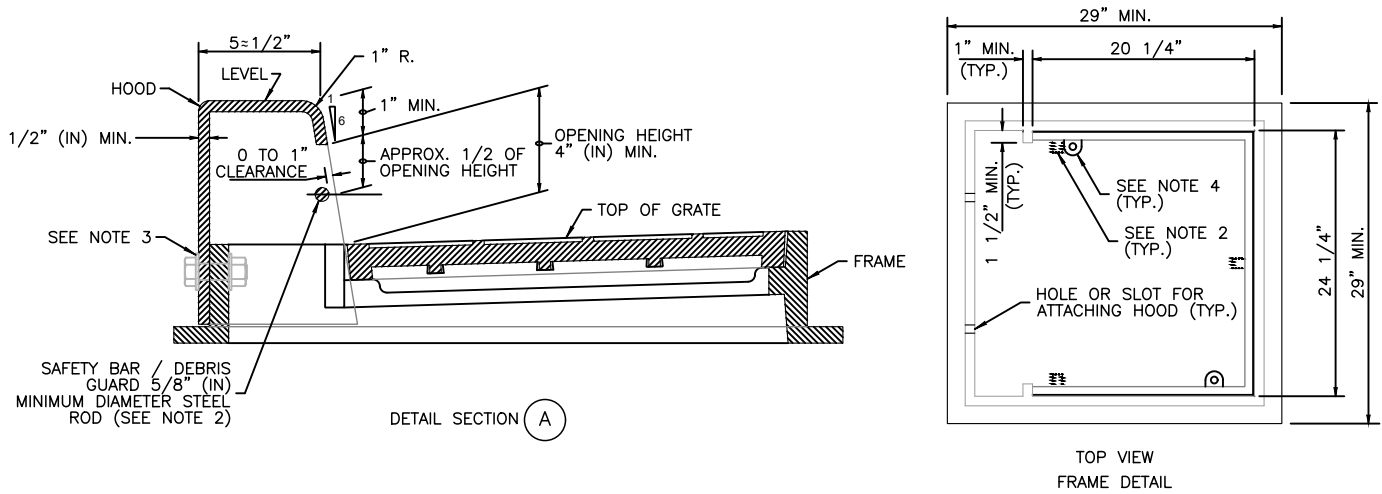


STANDARD CURB INLET

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

DRAWN BY	APPROVED BY	APPROVAL DATE
MDH	AR	02-2024
REVISION	APPROVED BY	APPROVAL DATE
-	-	-

STORM
DETAIL NO.
D-1.2



NOTES:

1. THIS INLET REQUIRES THE PRECAST CATCH BASIN UNIT TO BE ROTATED 90 DEGREES SO THAT THE NARROW SIDE IS PARALLEL TO THE CURB LINE. WHEN CALCULATING OFFSETS FROM CURB TO CENTERLINE (CL) OF THE PRECAST CATCH BASIN, PLEASE NOTE THAT THE CL OF THE GRATE IS NOT THE CL OF THE PRECAST CATCH SEE **SECTION A**.
2. THE DIMENSIONS OF THE FRAME AND HOOD MAY VARY SLIGHTLY AMONG DIFFERENT MANUFACTURERS. THE FRAME MAY HAVE CAST FEATURES INTENDED TO SUPPORT A DEBRIS GUARD. HOOD UNITS MAY BE MOUNTED INSIDE OR OUTSIDE OF THE FRAME. THE METHODS FOR FASTENING THE SAFETY BAR / DEBRIS GUARD ROD TO THE HOOD MAY VARY. THE HOOD MAY INCLUDE CASTING LUGS. THE TOP OF THE HOOD MAY BE CAST WITH A PATTERN.
3. ATTACH THE HOOD TO THE FRAME WITH TWO 3/4" (IN) x 2" (IN) HEX HEAD BOLTS, NUTS, AND OVERSIZE WASHERS. THE WASHERS SHALL HAVE DIAMETERS ADEQUATE TO ENSURE FULL BEARING ACROSS THE SLOTS.
4. BOLT-DOWN CAPABILITY IS REQUIRED ON ALL FRAMES, GRATES AND COVERS, UNLESS SPECIFIED OTHERWISE IN THE CONTRACT. PROVIDE TWO HOLES IN THE FRAME THAT ARE VERTICALLY ALIGNED WITH THE GRATE OR COVER SLOTS. THE FRAME SHALL ACCEPT THE 304 STAINLESS STEEL (S.S.) 5/8" (IN) - 11 NC x 2" (IN) ALLEN HEAD CAP SCREW BY BEING TAPPED, OR OTHER APPROVED MECHANISM. LOCATION OF BOLT-DOWN HOLES VARIES BY MANUFACTURER. SEE BOLT-DOWN DETAIL, WSDOT STANDARD PLAN B-30.10.
5. ONLY DUCTILE IRON VANED GRATES SHALL BE USED. SEE WSDOT STANDARD PLANS B-30.30 AND B-30.40 FOR GRATE DETAILS. REFER TO WSDOT STANDARD SPECIFICATION SECTION 9-05.15(2) FOR ADDITIONAL REQUIREMENTS.
6. THIS PLAN IS INTENDED TO SHOW THE INSTALLATION DETAILS OF A MANUFACTURED PRODUCT. THIS PLAN IS NOT INTENDED TO SHOW THE SPECIFIC DETAILS NECESSARY TO FABRICATE THE CASTINGS DEPICTED IN THIS DRAWING.

N.T.S.



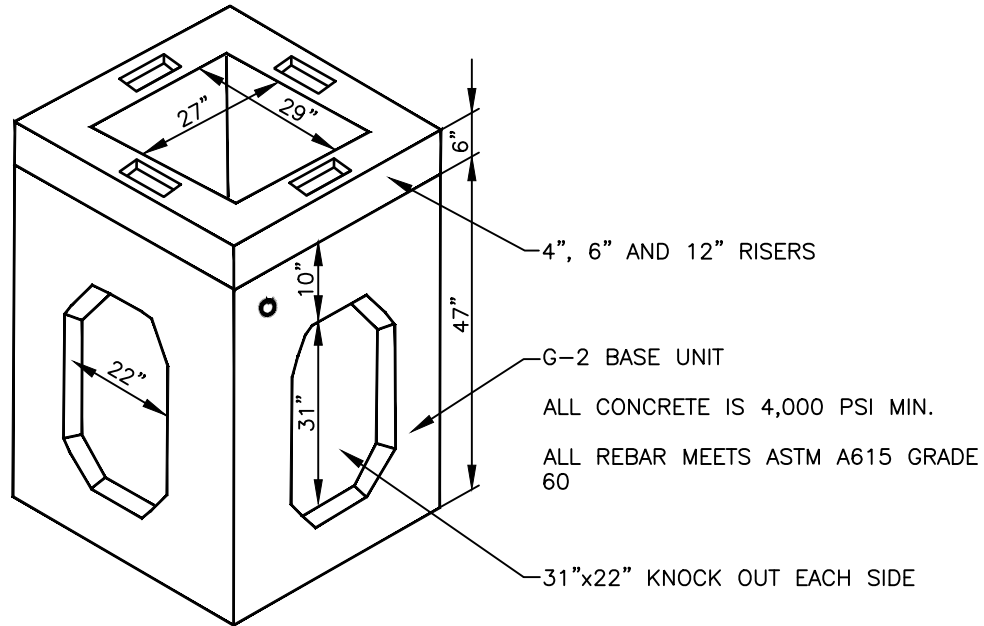
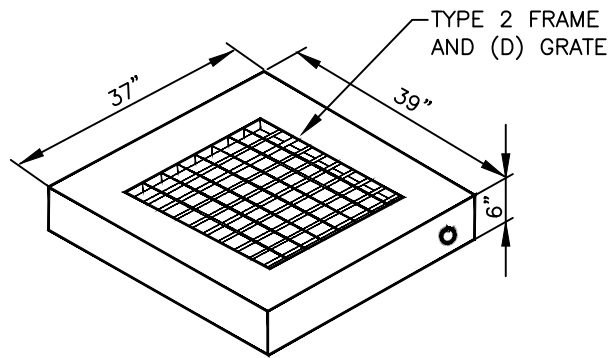
STANDARD COMBINATION INLET

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

DRAWN BY	APPROVED BY	APPROVAL DATE
MDH	AR	02-2024
REVISION	APPROVED BY	APPROVAL DATE
-	-	-

STORM
DETAIL NO.

D-1.3



NOTES:

1. LATERALS WILL BE CONSTRUCTED TO ENTER THE BASIN PERPENDICULAR TO THE BASIN WALL. THE LATERAL WILL ENTER ONLY AT THE FRONT OR SIDE OF THE BASIN WITH NO LATERALS ALLOWED TO ENTER THE CATCH BASIN AT THE CORNERS. IF NEEDED, A BEND MAY BE USED AS THE FIRST SECTION OF PIPE OUTSIDE THE BASIN WALL. THE MAXIMUM BEND ALLOWED IS 45 DEGREES.
2. ALL REINFORCED STEEL SHALL HAVE A 1-1/2" CLEAR COVER UNLESS OTHERWISE NOTED, AND SHALL BE GRADE 40 OR GRADE 60 (ASTM A-615).
3. ANY PROTRUDING ENDS OF PIPES SHALL BE TRIMMED FLUSH WITH THE INSIDE WALLS AND GROUTED.
4. THE METAL FRAME AND GRATE SHALL BE SET TO A SLOPE TO CONFORM WITH THE EXISTING OR PROPOSED CURB GRADE AND ROAD CROSS SLOPE.
5. ALL NEW CATCH BASINS SHALL BE LABELED WITH "PROTECT WATER * ONLY RAIN IN DRAIN" MEDALLIONS. MEDALLIONS SHALL BE AFFIXED TO DRY SURFACES WITH A HIGH QUALITY POLYURETHANE SEALANT AND RIVETS. APPROVED MEDALLIONS ARE AVAILABLE FOR PURCHASE AT THE CITY'S PERMIT COUNTER (360) 487-7804.

N.T.S.



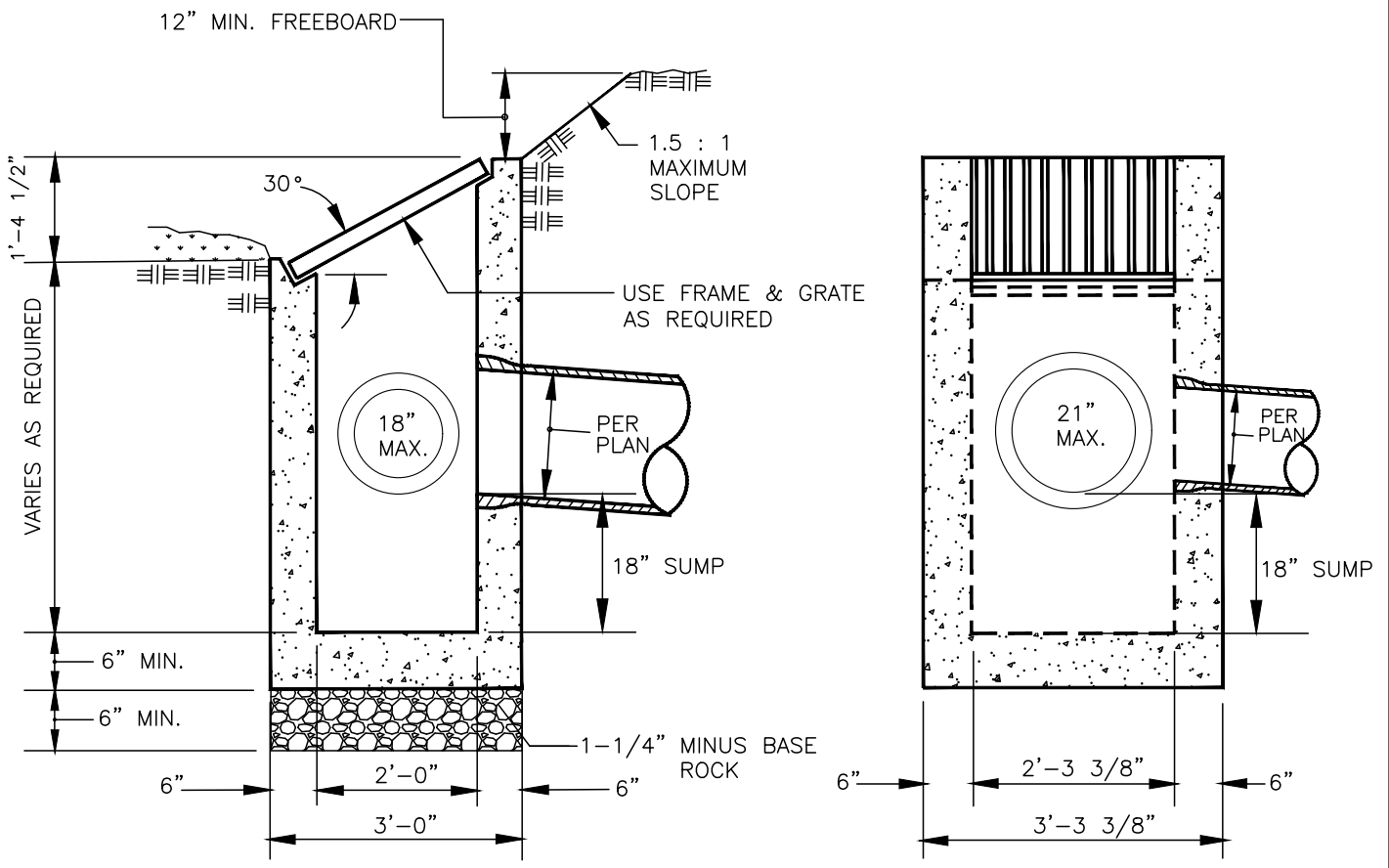
G-2 CATCH BASIN

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

DRAWN BY	APPROVED BY	APPROVAL DATE
MDH	AR	02-2024
REVISION	APPROVED BY	APPROVAL DATE
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STORM
DETAIL NO.

D-1.4

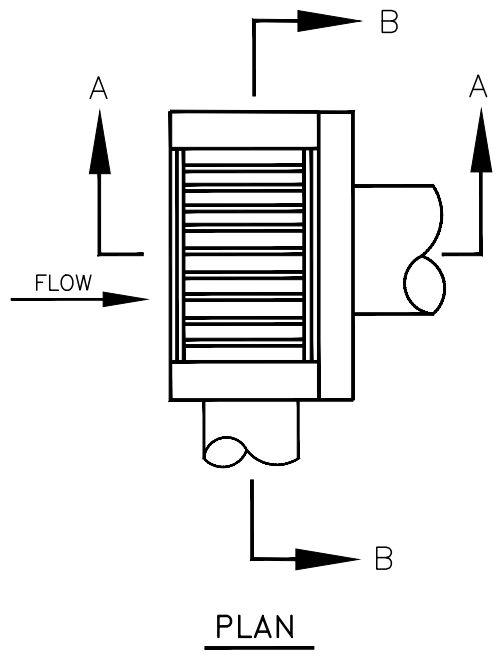


SECTION A-A

SECTION B-B

NOTES:

1. ALL PRECAST SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478.
2. ALL POURED IN PLACE CONCRETE SHALL HAVE A 28 DAY STRENGTH OF 3,000 P.S.I. AND 2" TO 4" SLUMP.
3. STEEL TO BE NEW STRUCTURAL STEEL, ASTM A-7, A-36, OR A-373.
4. USE SLANTED OR BOX FRAME AND GRATE AS REQUIRED BY CITY.
5. ALL NEW CATCH BASINS SHALL BE LABELED WITH "PROTECT WATER * ONLY RAIN IN DRAIN" MEDALLIONS. MEDALLIONS SHALL BE AFFIXED TO DRY SURFACES WITH A HIGH QUALITY POLYURETHANE SEALANT AND RIVETS. APPROVED MEDALLIONS ARE AVAILABLE FOR PURCHASE AT THE CITY'S PERMIT COUNTER (360) 487-7804.



PLAN

N.T.S.

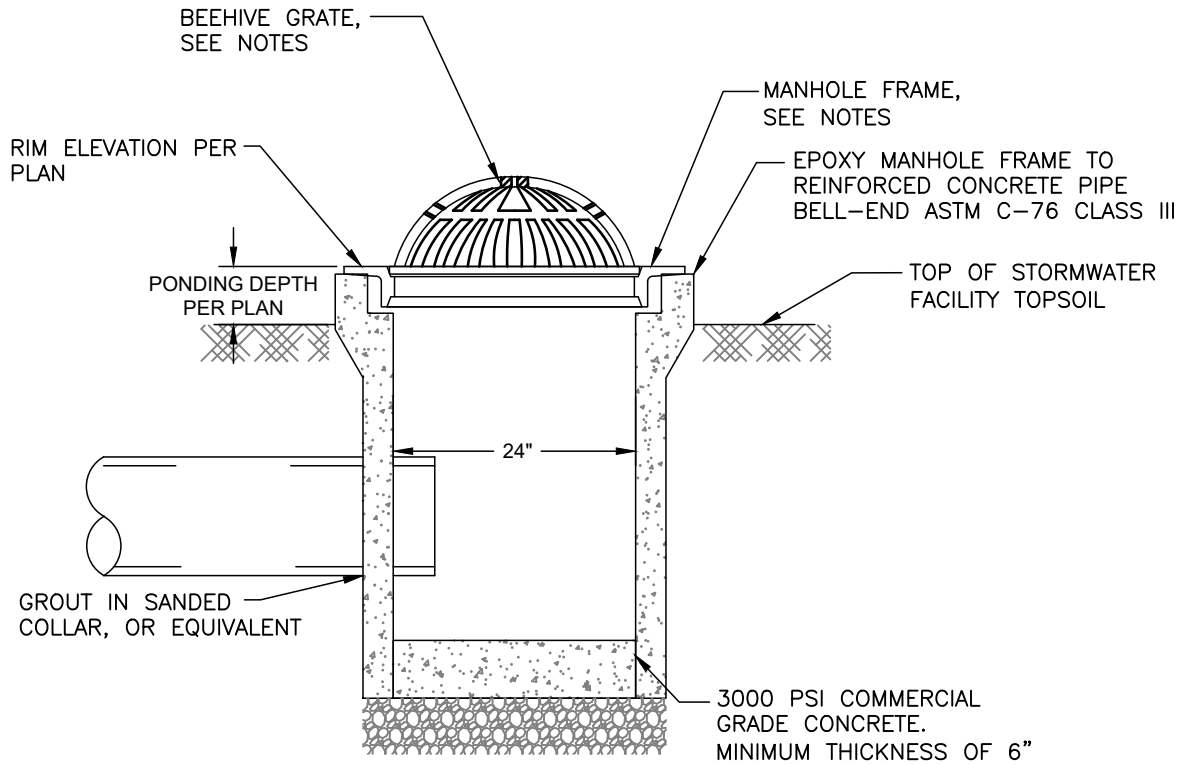


SLOPED FIELD INLET

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

DRAWN BY	APPROVED BY	APPROVAL DATE
MDH	AR	02-2024
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-	-	-

STORM
DETAIL NO.
D-1.5



NOTES:

1. INSTALL OLYMPIC FOUNDRY INC. MH25 BEEHIVE GRATE WITH MH30 24x4 REVERSIBLE RING, OR APPROVED EQUAL.
 - a. CAST IRON ASTM A48 CL30
 - b. 276 OPEN SQUARE INCHES
 - c. BOLT GRATE TO FRAME IN 2 PLACES WITH $\frac{3}{8}$ " SS HEX BOLT. COUNTER SINK NOT REQUIRED
 - d. BOLTS TO HAVE ANTI-SEIZE THREAD LUBRICANT APPLIED AT INSTALLATION.

N.T.S.



STANDARD BEEHIVE OVERFLOW INLET

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

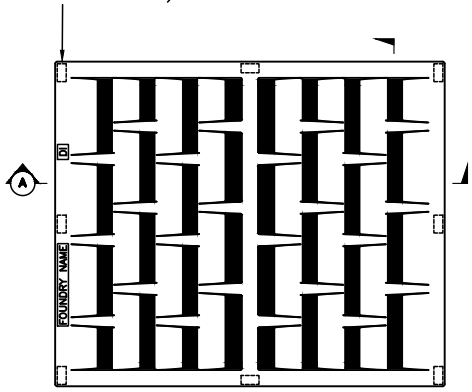
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MDH	AR	02-2024
REVISION	APPROVED BY	APPROVAL DATE
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STORM
DETAIL NO.

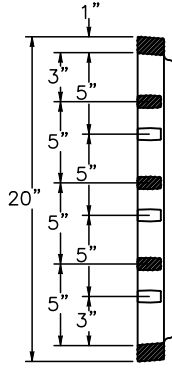
D-1.6

ALTERNATE A
(SEE NOTE 1)

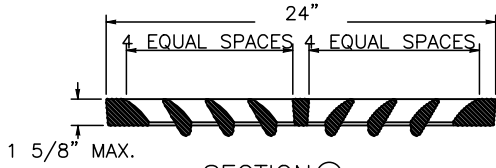
RECTANGULAR
BI-DIRECTIONAL
VANED GRATE



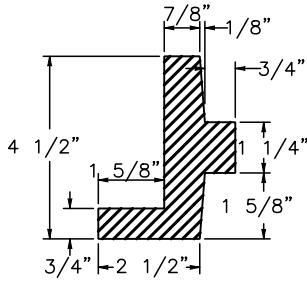
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SECTION B

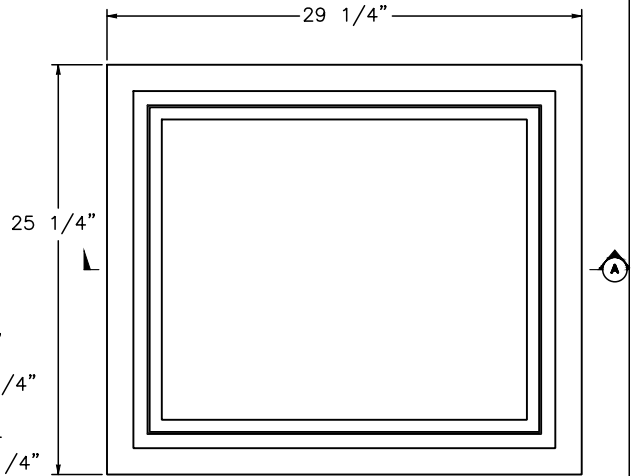


SECTION A



DETAIL B

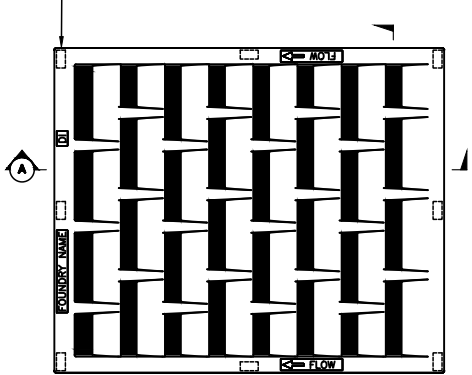
RECTANGULAR FRAME



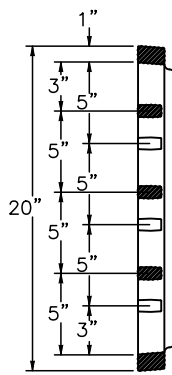
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ALTERNATE A
(SEE NOTE 1)

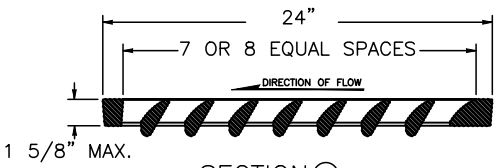
RECTANGULAR
VANED GRATE



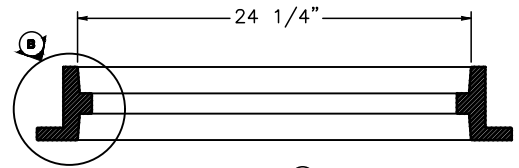
TOP



SECTION B



SECTION A



SECTION A

NOTES:

1. SEATING OF GRATE SHALL BE ACCOMPLISHED BY ONE OF THE FOLLOWING:
 - ALTERNATE A SHALL BE 8 PADS 1-1/2" x 3/4" x 1/8" INTEGRALLY CAST WITH THE GRATE.
 - ALTERNATE B SHALL BE A MACHINED SURFACE.

N.T.S.



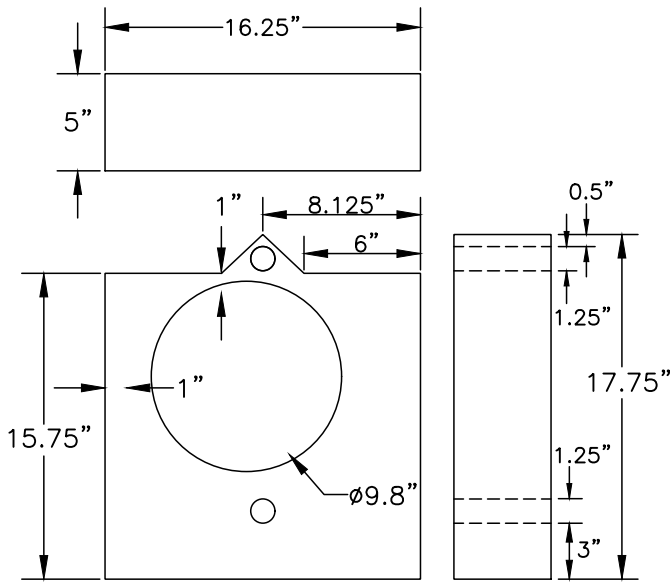
STANDARD RECTANGULAR VANED GRATE & FRAME

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

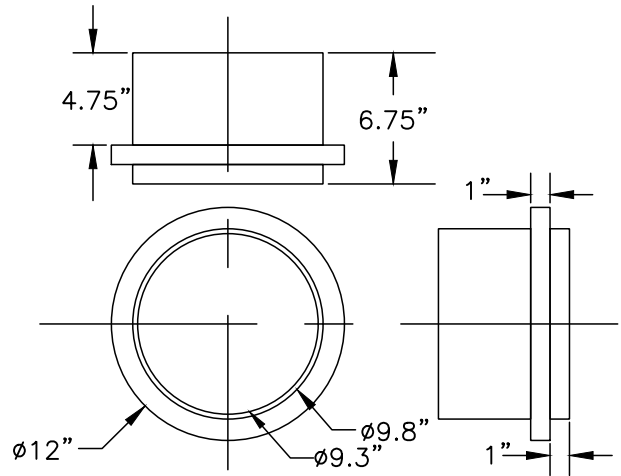
DRAWN BY	APPROVED BY	APPROVAL DATE
MDH	AR	02-2024
REVISION	APPROVED BY	APPROVAL DATE
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STORM
DETAIL NO.

D-1.7



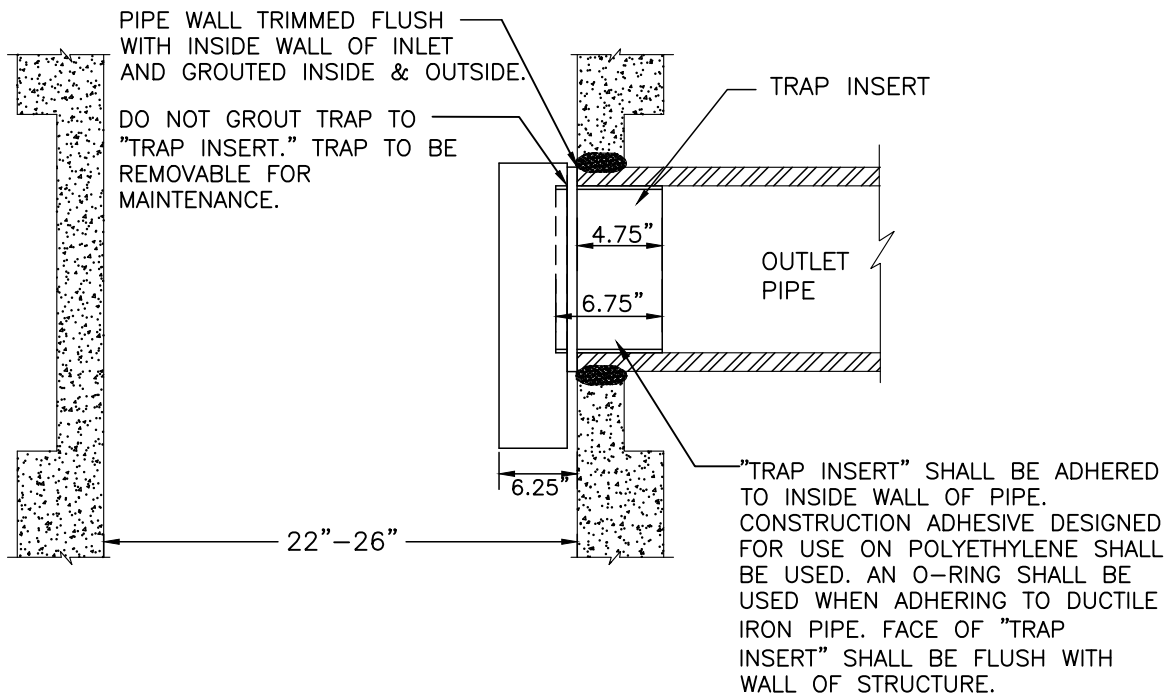
LOW PROFILE TRAP
NTS



TRAP INSERT
NTS

MATERIAL HDPE

ZYMARK BRAND OR EQUIVALENT



N.T.S.



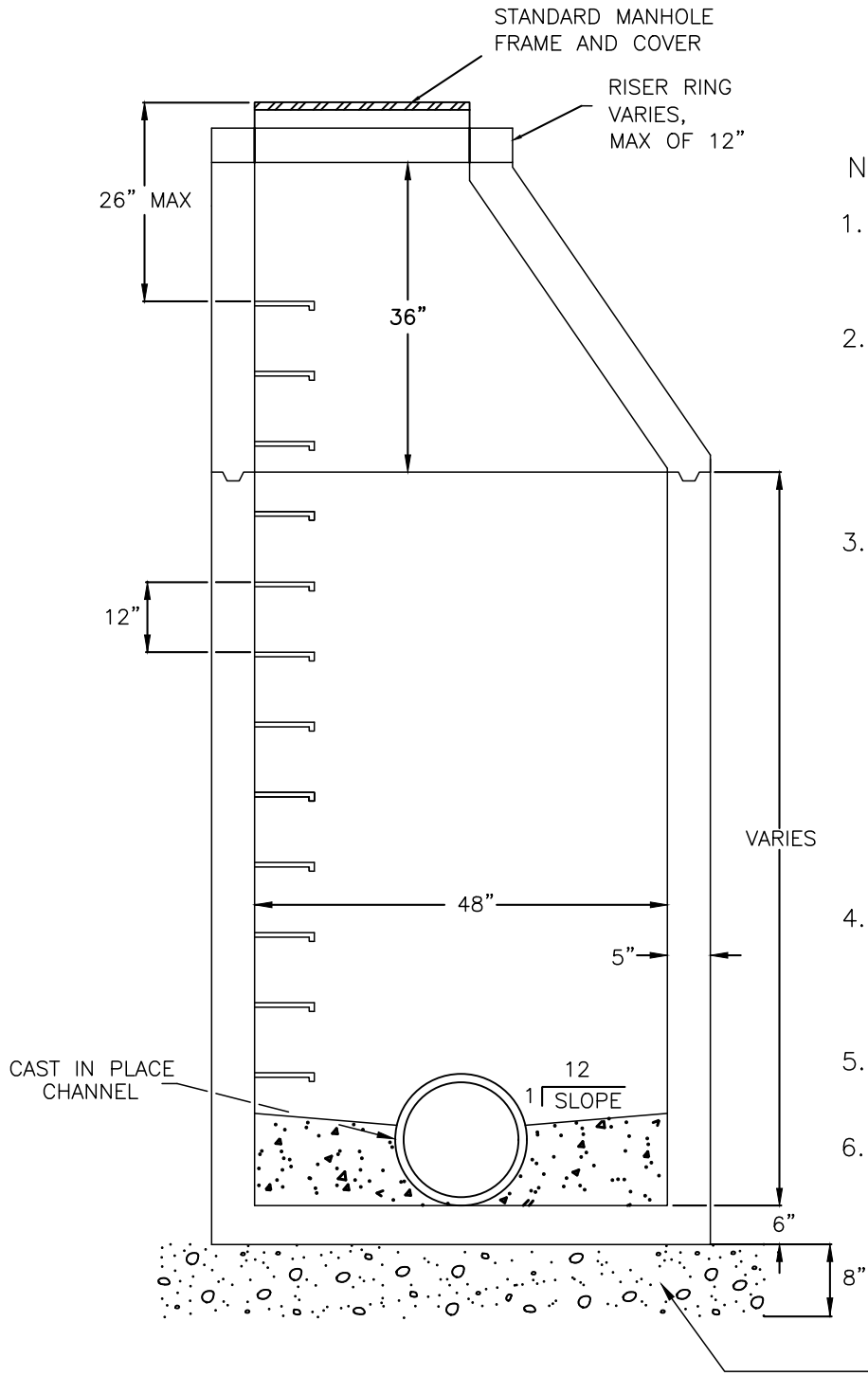
CATCH BASIN TRAP

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

DRAWN BY	APPROVED BY	APPROVAL DATE
MDH	AR	02-2024
REVISION	APPROVED BY	APPROVAL DATE
-	-	-

STORM
DETAIL NO.

D-1.8



NOTES:

1. ALL PRECAST SECTIONS SHALL CONFORM TO REQUIREMENTS OF A.S.T.M. C478.
2. BASE CONCRETE SHALL BE 3000 P.S.I., 2"-4" SLUMP. FLOW LINES AND INSIDE SURFACES SHALL BE TROWELED SMOOTH AND UNIFORM AT TIME OF POUR.
3. JOINTS SHALL BE CONSTRUCTED SO AS TO BE WATERTIGHT. KENT-SEAL NO. 2 OR APPROVED EQUAL SHALL BE USED ON TONGUE AND GROOVE SECTIONS. PREMOLDED "O" RING MAY BE SUBSTITUTED ON BELL AND SPIGOT SECTIONS. ALL JOINTS SHALL BE GROUTED WITH PORTLAND CEMENT GROUT AND STRUCK EVEN WITH THE WALL.
4. MANHOLES UNDER 6 FEET IN DEPTH FROM RIM TO SHELF SHALL HAVE A TOP SLAB IN LIEU OF CONE.
5. ALLOWABLE DISTANCE BETWEEN PIPE KNOCKOUTS IS 8 INCHES.
6. SEE TRANSPORTATION STD. PLAN T05-06C FOR CDF BACKFILL REQUIREMENTS.

BEDDING PER SECTION 9-03.12(3)

STANDARD MANHOLE FOR 24-INCH OR SMALLER PIPE OR 30-INCH DUCTILE IRON PIPE

N.T.S.



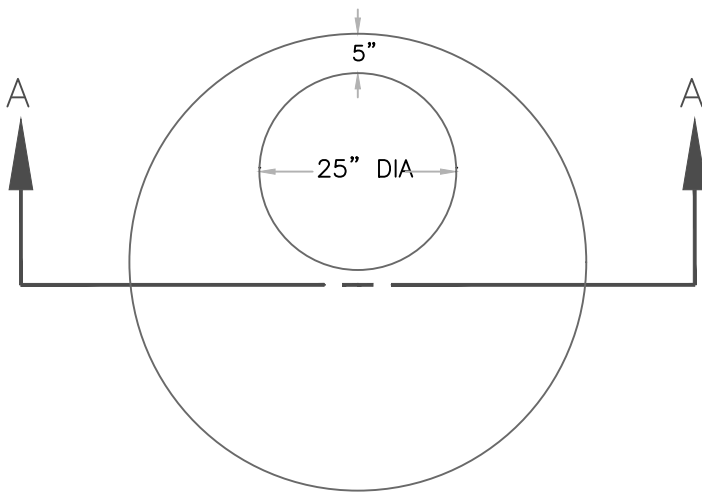
STANDARD MANHOLE

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

DRAWN BY	APPROVED BY	APPROVAL DATE
MDH	AR	02-2024
REVISION	APPROVED BY	APPROVAL DATE
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STORM
DETAIL NO.

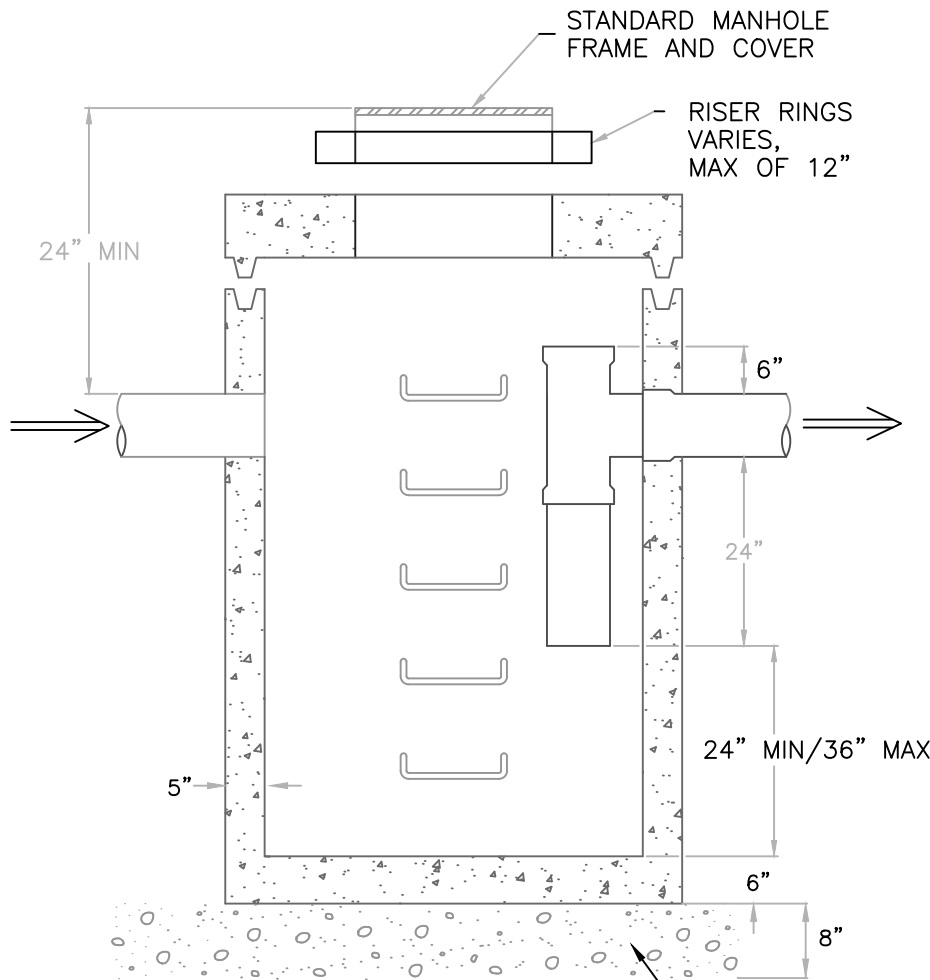
D-2.0



PLAN

NOTES:

1. SEE STANDARD MANHOLE DETAIL D-2.0 FOR DETAILS ON THE MANHOLE SECTIONS AND STEP SPECIFICATIONS.
2. TEE SECTION SHALL BE REMOVABLE FOR MAINTENANCE PURPOSES.
3. ANY PROTRUDING ENDS OF PIPES SHALL BE TRIMMED FLUSH WITH THE INSIDE WALLS AND GROUTED.



SECTION A-A

BEDDING PER SECTION 9-03.12(3) OF THE STANDARD SPECIFICATIONS.

N.T.S.



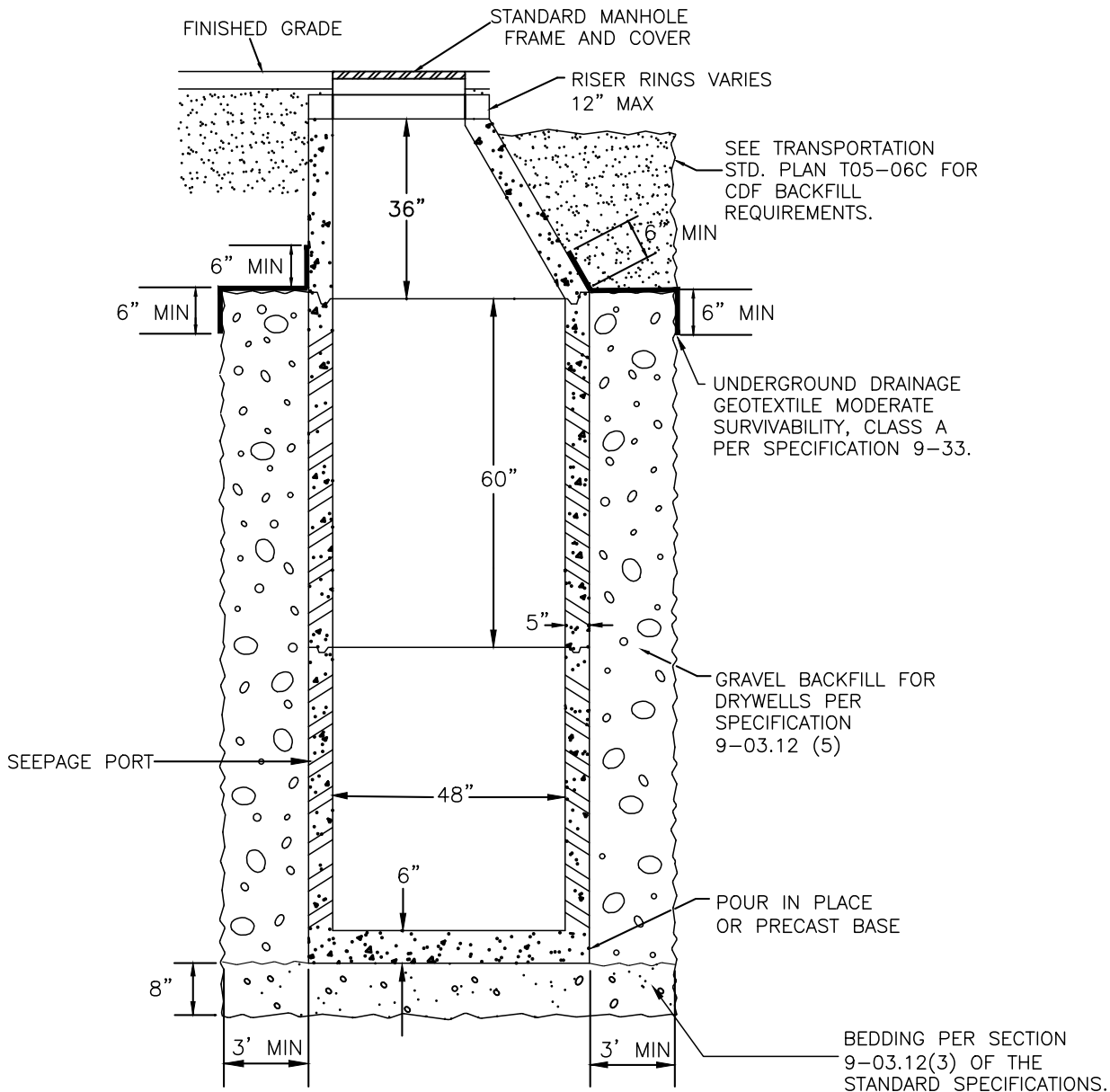
PRE-SEDIMENTATION / SEPARATOR MANHOLE

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

DRAWN BY	APPROVED BY	APPROVAL DATE
MDH	AR	02-2024
REVISION	APPROVED BY	APPROVAL DATE
-	-	-

STORM
DETAIL NO.

D-2.1



NOTES:

1. ALL PRECAST SECTIONS SHALL CONFORM TO REQUIREMENTS OF A.S.T.M. C478.
2. ALL PIPING TO AND FROM PRECAST DRYWELLS SHALL HAVE AT LEAST 8" OF 1-1/2" MINUS CLEAN CRUSHED ROCK COVER CONTINUOUSLY AROUND PIPE WHERE DRAIN ROCK WOULD OTHERWISE BE IN CONTACT WITH PIPE.
3. PERFORATIONS SHALL BE HORIZONTAL ROWS OF (14) 2-1/4" SQUARE OR (14) 2-3/8" ROUND HOLES, EQUALLY SPACED. ROWS SHALL BE SPACED 6-1/2" CENTER TO CENTER. SEEPAGE PORTS SHALL BE ANGLED AS SHOWN OR HORIZONTAL. SEEPAGE PORTS ORIENTATED UP AT THE OUTSIDE WALL MAY BE ALLOWED PROVIDED THE DRYWELL IS WRAPPED WITH APPROVED GEOGRID; MIRAFI MIRAMESH, NORPLEX HN1460L-70, OR EQUAL.
4. STANDARD DRYWELL DEPTH SHALL BE 13 FEET UNLESS NOTED OTHERWISE, MAXIMUM DEPTH IS 18 FEET.
5. ANY PROTRUDING ENDS OF PIPES SHALL BE TRIMMED FLUSH WITH THE INSIDE WALLS AND GROUTED.

N.T.S.



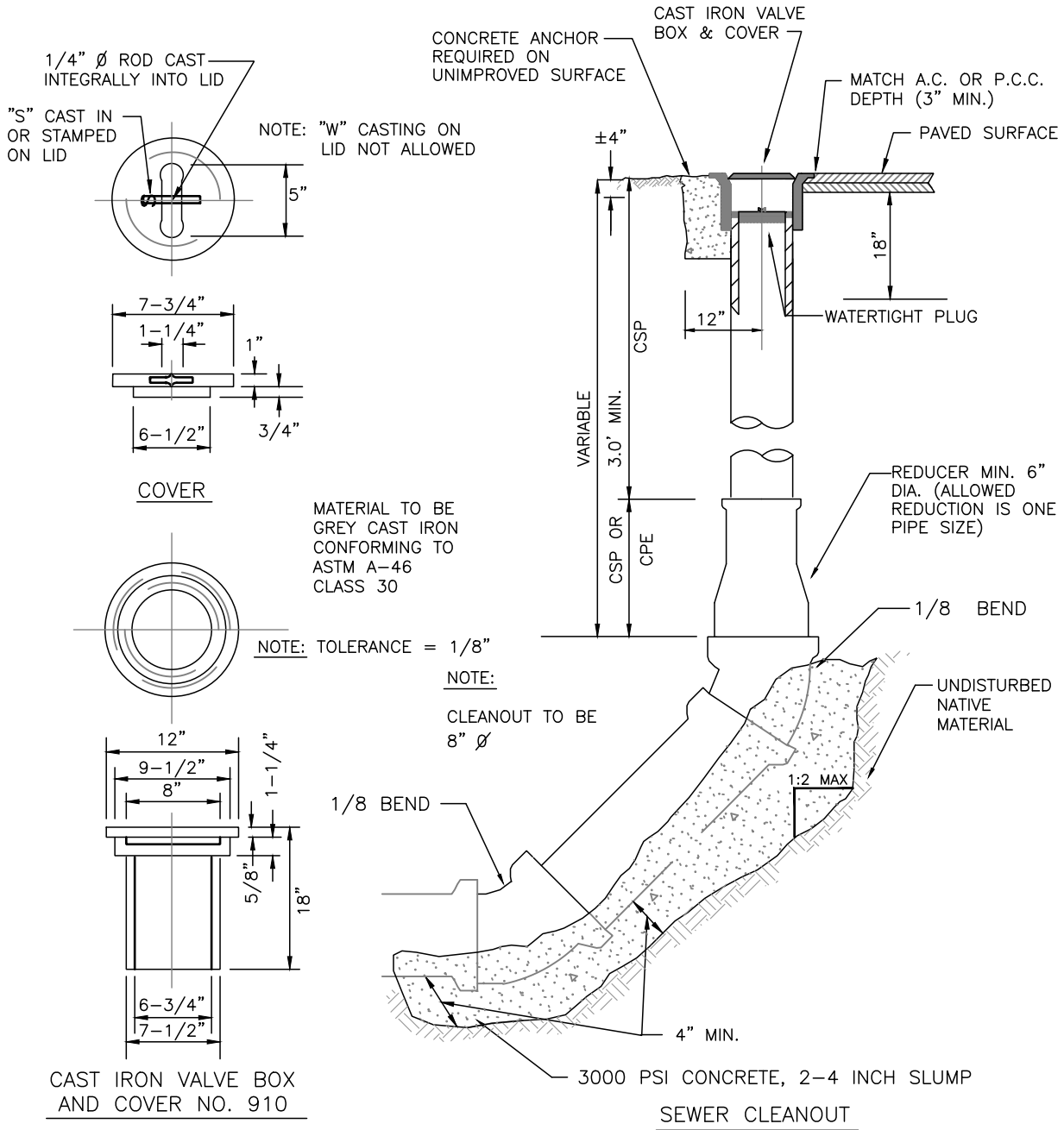
STANDARD PRE-CAST DRYWELL

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

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-	-	-

STORM
DETAIL NO.

D-2.2



VALVE BOX SHALL BE FORT VANCOUVER
 PATTERN NO. 910 CAST IRON OR APPROVED EQUAL

N.T.S.



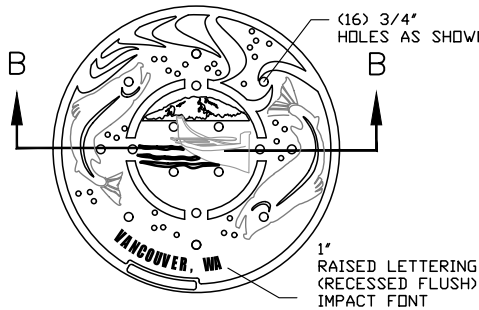
STANDARD SEWER CLEANOUT

CITY OF VANCOUVER
 DEPARTMENT OF PUBLIC WORKS
 SURFACE WATER MANAGEMENT

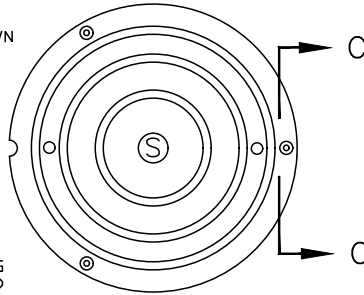
DRAWN BY	APPROVED BY	APPROVAL DATE
MDH	AR	02-2024
REVISION	APPROVED BY	APPROVAL DATE
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STORM
 DETAIL NO.

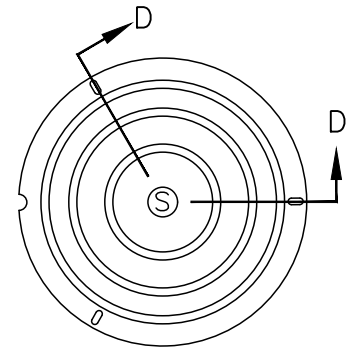
D-2.3



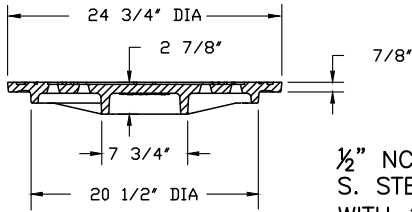
STANDARD LID



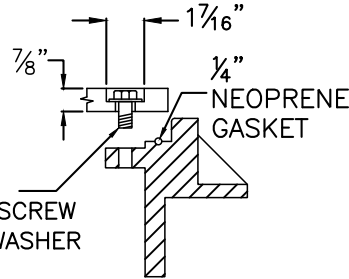
BOLT DOWN LID



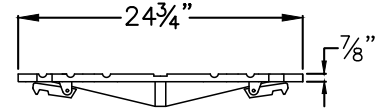
"CAM-LOCK" LID



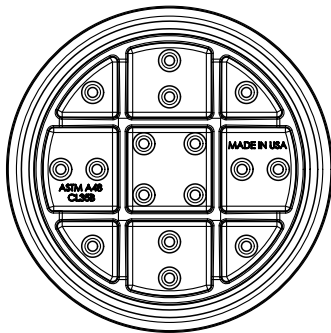
SECTION B-B



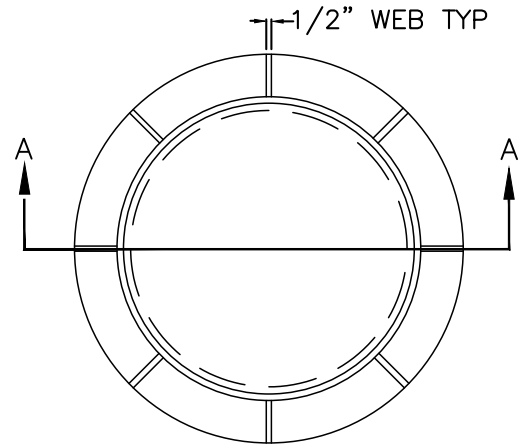
SECTION C-C



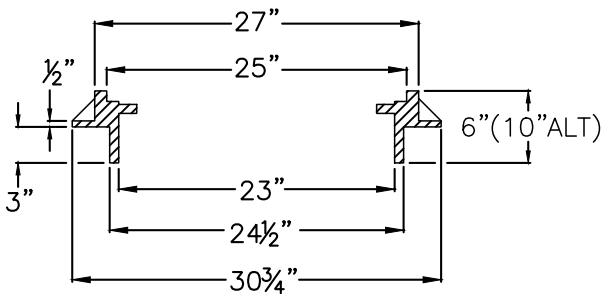
SECTION D-D



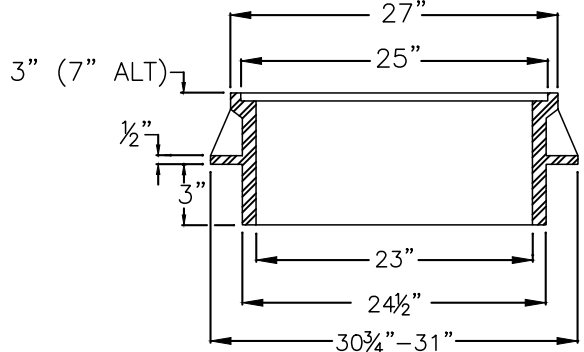
STANDARD LID BACK



FRAME



SECTION A-A
BOLT DOWN FRAME



SECTION A-A
STANDARD AND
"CAMLOCK" FRAME

BOLT DOWN LID SHALL BE USED FOR ALL CURB INLETS AND COMBINATION CURB INLETS.

N.T.S.



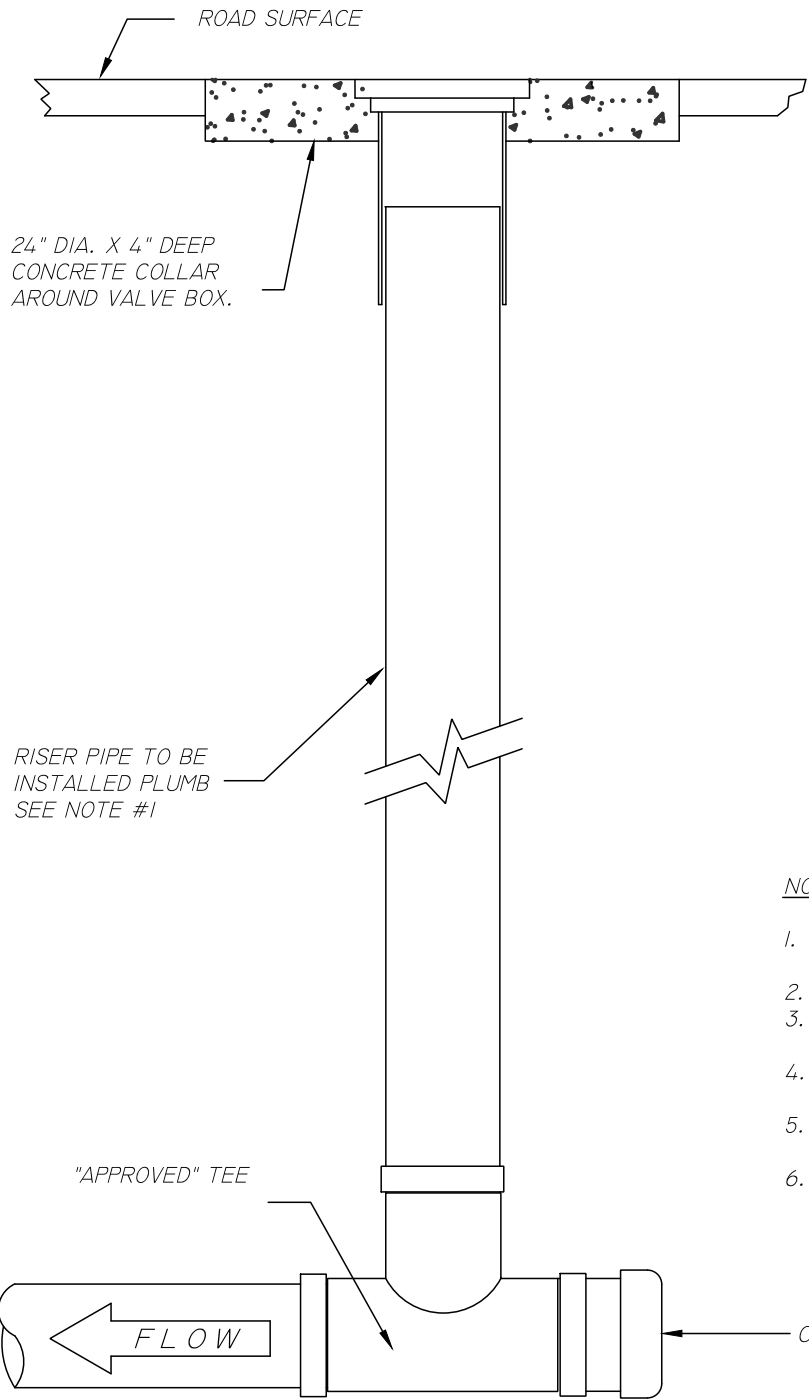
MANHOLE COVER AND FRAME

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

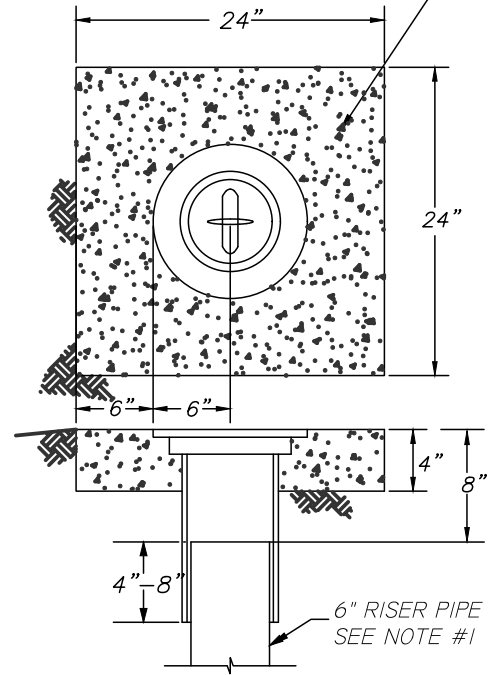
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STORM
DETAIL NO.

D-2.4



CONCRETE COLLAR FOR VALVE BOXES SET IN PAVED AND UNPAVED AREAS. (24" SQUARE, 4" THICK)



NOTES:

1. RISER PIPE SHALL BE 6" DIAMETER AND MATCH MAINLINE PIPE MATERIALS.
2. VALVE BOX SHALL BE "VANCOUVER 910".
3. THERE SHALL BE 1/2" CLEARANCE UNDER THE PIN CAST INTO THE LID.
4. CONCRETE COLLAR SHALL BE A MINIMUM STRENGTH OF 3000 PSI.
5. PIPE BEDDING SHALL CONFORM TO STANDARD DETAIL D-3.1.
6. TEE SHALL MATCH PIPE DIAMETERS.

N.T.S.



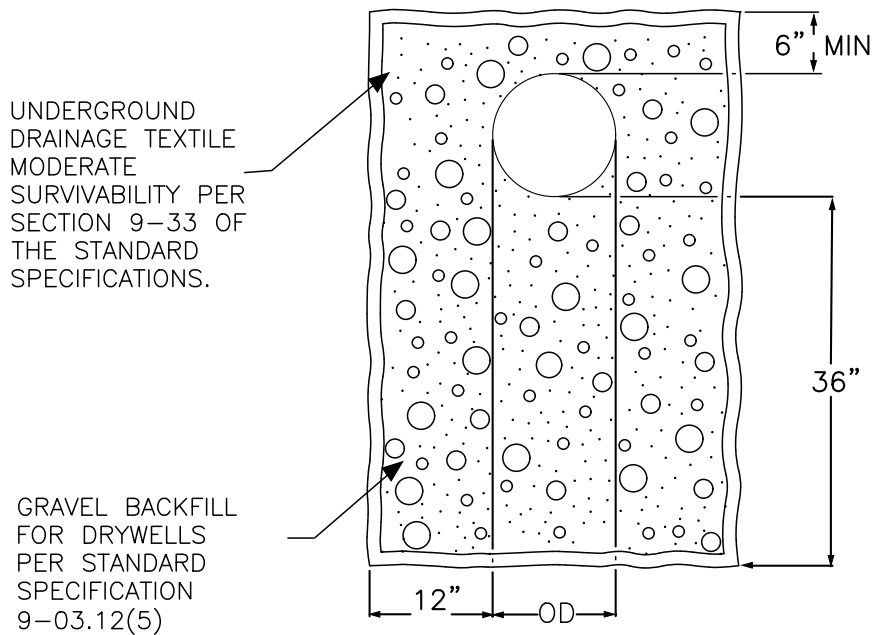
STORM STUB MARKER

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

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STORM
DETAIL NO.

D-2.5



STANDARD PERFORATED
PIPE SECTION

STORM SEWER TRENCH – MAIN LINE ONLY
(ALL LATERALS TO BE NON-PERFORATED)

NOTES

1. BACKFILL AND COMPACTION ABOVE THE PIPE ZONE SHALL BE AS SHOWN IN STANDARD DETAIL D-3.2.
2. TRENCH DIMENSIONS PER DETAIL SHOWN FOR PUBLIC RIGHT OF WAY. ALTERNATIVE SECTION MUST BE APPROVED BY CITY OF VANCOUVER. ALTERNATIVE DETAIL MUST BE INCLUDED ON PLANS.

N.T.S.



STANDARD PERFORATED PIPE

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

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STORM
DETAIL NO.

D-3.1A

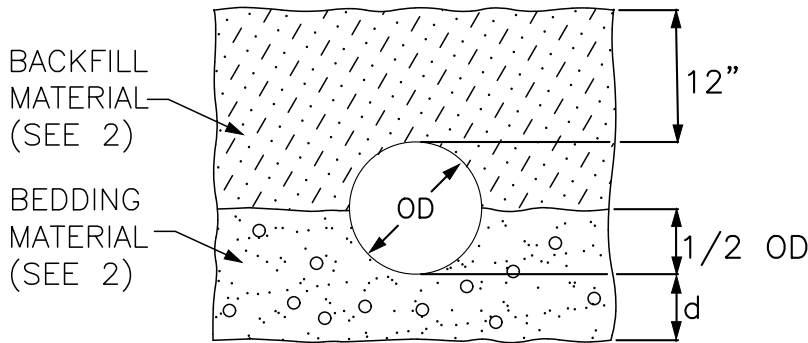
NOTES:

1. BEDDING AND COMPACTION ABOVE THE PIPE ZONE SHALL BE AS SHOWN IN STANDARD DETAIL D-3.2.
2. BEDDING MATERIALS SHALL CONFORM TO SECTION 9-03.12(3).
3. BEDDING AND BACKFILL MATERIALS IN THE PIPE ZONE SHALL BE COMPACTED TO 95%.

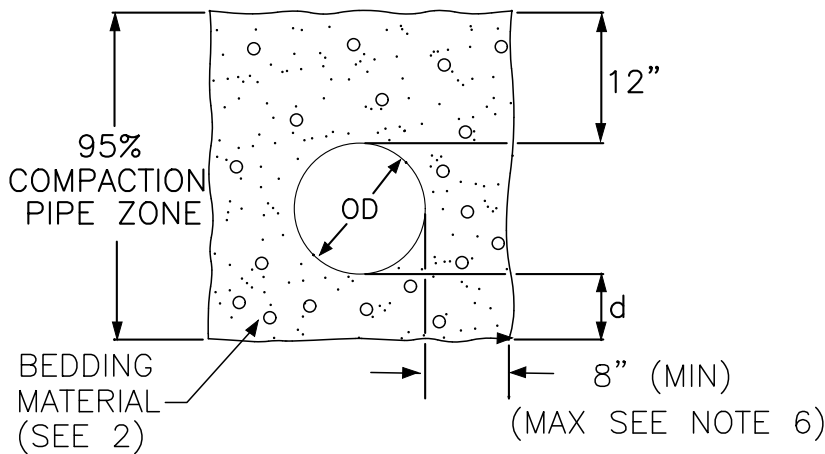
DEPTH OF BEDDING MATERIAL BELOW PIPE	
OD	d (MIN)
27" & SMALLER	4"
LARGER THAN 27"	6"

4. FOR ROCK AND OTHER INCOMPRESSIBLE MATERIALS, THE TRENCH SHALL BE OVER EXCAVATED A MINIMUM OF 6 INCHES AND REFILLED WITH GRANULAR MATERIAL AS DIRECTED BY THE ENGINEER.
5. NATIVE MATERIAL MAY BE USED IN LIEU OF IMPORTED MATERIAL FOR BEDDING SPECIFIED PROVIDED THAT THE NATIVE MATERIAL CONFORMS TO SECTION 9-03.12(3) OF THE STANDARD SPECIFICATIONS AND IS APPROVED BY THE ENGINEER. THE CONTACTOR SHALL SUBMIT A SAMPLE OF THE NATIVE MATERIAL TO A GEOTECHNICAL ENGINEER FOR LABORATORY TESTING AND ANALYSIS. THE GEOTECHNICAL ENGINEER SHALL PROVIDE A REPORT OF THE SUITABILITY OF THE NATIVE MATERIAL FOR PIPE BEDDING PRIOR TO USE.
6. TRENCH WIDTH SHALL NOT EXCEED 1-1/2 TIMES THE OD OF THE PIPE PLUS 18 INCHES AT THE TOP OF THE PIPE ZONE.
7. ALL JOINTS SHALL BE AIR-TIGHT FOR NON-PERFORATED PIPE. THE ENGINEER MAY REQUIRE TESTING OF ANY OR ALL JOINTS AND CONNECTIONS.

N.T.S.



RIGID PIPE BEDDING DETAIL



FLEXIBLE PIPE BEDDING DETAIL



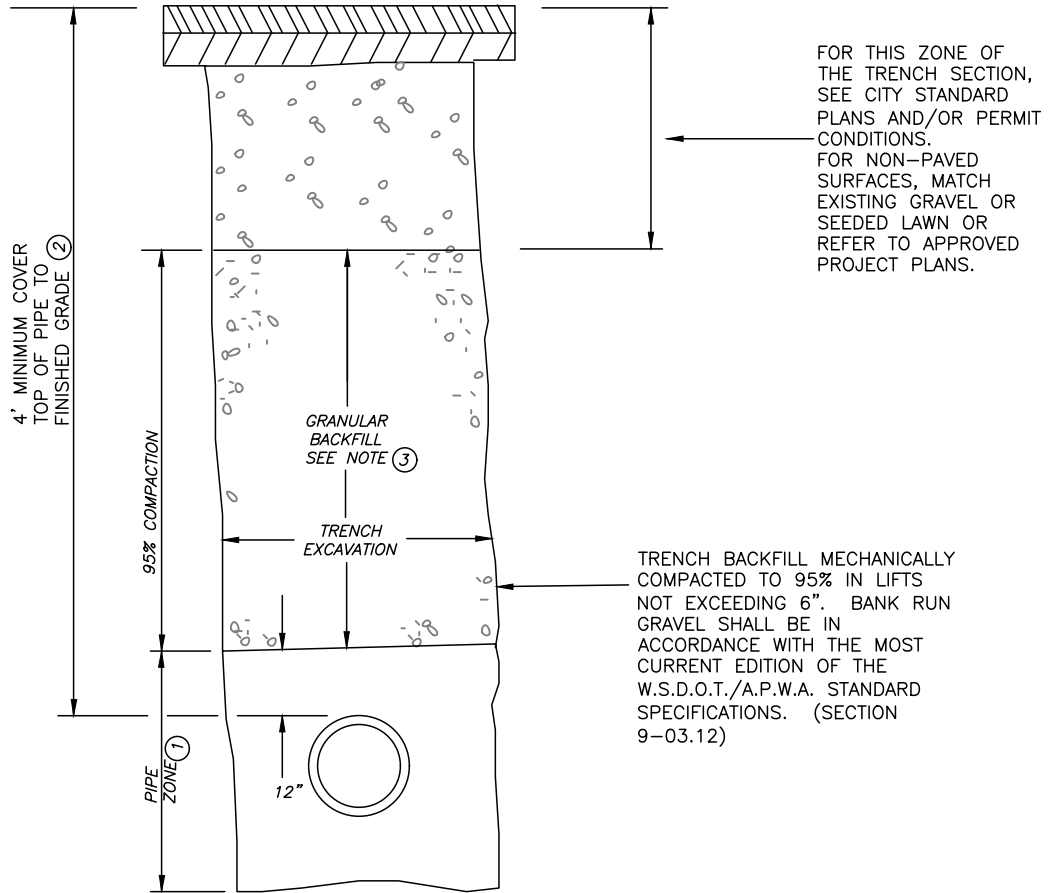
RIGID & FLEXIBLE PIPE BEDDING

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

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STORM
DETAIL NO.

D-3.1B

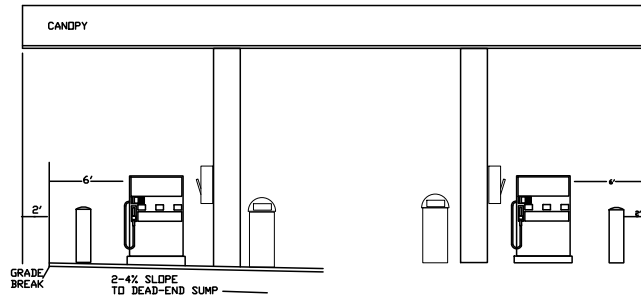
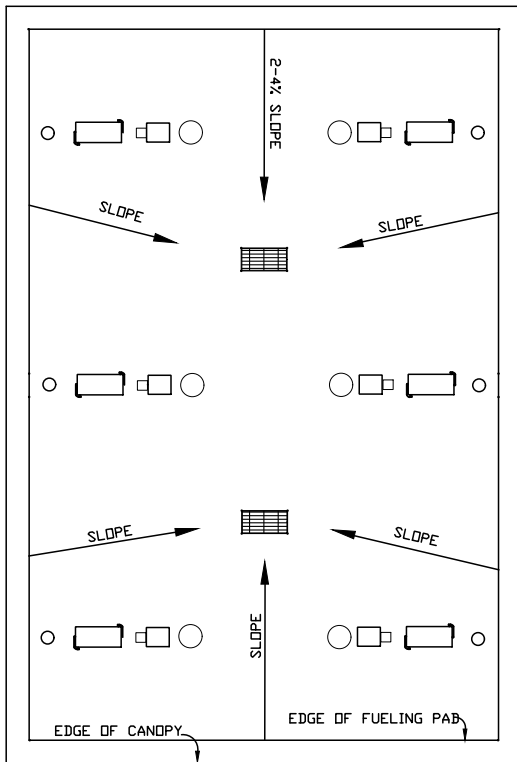


NOTES:

1. FOR PIPE ZONE BEDDING, SEE STANDARD DETAIL D-3.1A FOR PERFORATED PIPE OR STANDARD DETAIL D-3.1B FOR RIGID & FLEXIBLE PIPE.
2. MINIMUM COVER FROM TOP OF PIPE TO FINISHED GRADE MAY BE REDUCED TO 3' WHEN DUCTILE IRON PIPE IS USED AND APPROVED BY THE CITY OF VANCOUVER.
3. CONTROLLED DENSITY FILL (CDF) MAY BE REQUIRED BASED ON THE CITY STANDARDS.
4. OVERSIZE MATERIAL (4"OR LARGER) SHALL NOT BE ALLOWED IN TRENCH.

N.T.S.

 CITY OF Vancouver WASHINGTON	TRENCH BACKFILL			STORM DETAIL NO. D-3.2
	CITY OF VANCOUVER DEPARTMENT OF PUBLIC WORKS SURFACE WATER MANAGEMENT			
	DRAWN BY	APPROVED BY	APPROVAL DATE	
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REVISION	APPROVED BY	APPROVAL DATE		
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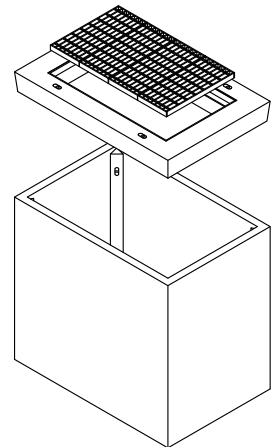


Notes on Fueling Island

1. Install drains centered between rows of fueling pumps. Drains shall connect to dead-end sump(s).
2. Fueling pad to be impervious Portland cement or equivalent, sloping 2-4% on all sides toward the drains.
Pad shall extend at least 6 ft. from edge of fueling dispenser.
3. If a graded pad is not achievable, the City may approve a pad with berms located on all downslope edges of pad and a drain located near a bermed edge.
4. Fuel island shall be covered by a canopy to prevent rain or snow from falling on the pad. Cover shall extend at least 2 ft. beyond the edge of the grade break on the perimeter of the pad (or extend past berms).
5. Rain runoff from canopy can be directed to storm drain but not to pad.

Notes on Dead-End Sump

1. Sump shall be a solid wall inlet vault (no outlet openings). The City recommends a 6'L x 4'W size vault with a depth of 5½' which gives a capacity of approx. 700 gals. Smaller sizes may be submitted for approval.
2. Top should fit a steel inlet grate rated H-20 with minimum 6" top frame thickness. Concrete to be rated at 4,000 psi minimum.



N.T.S.



STANDARD FUELING ISLAND

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

DRAWN BY	APPROVED BY	APPROVAL DATE
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STORM
DETAIL NO.
D-4.0