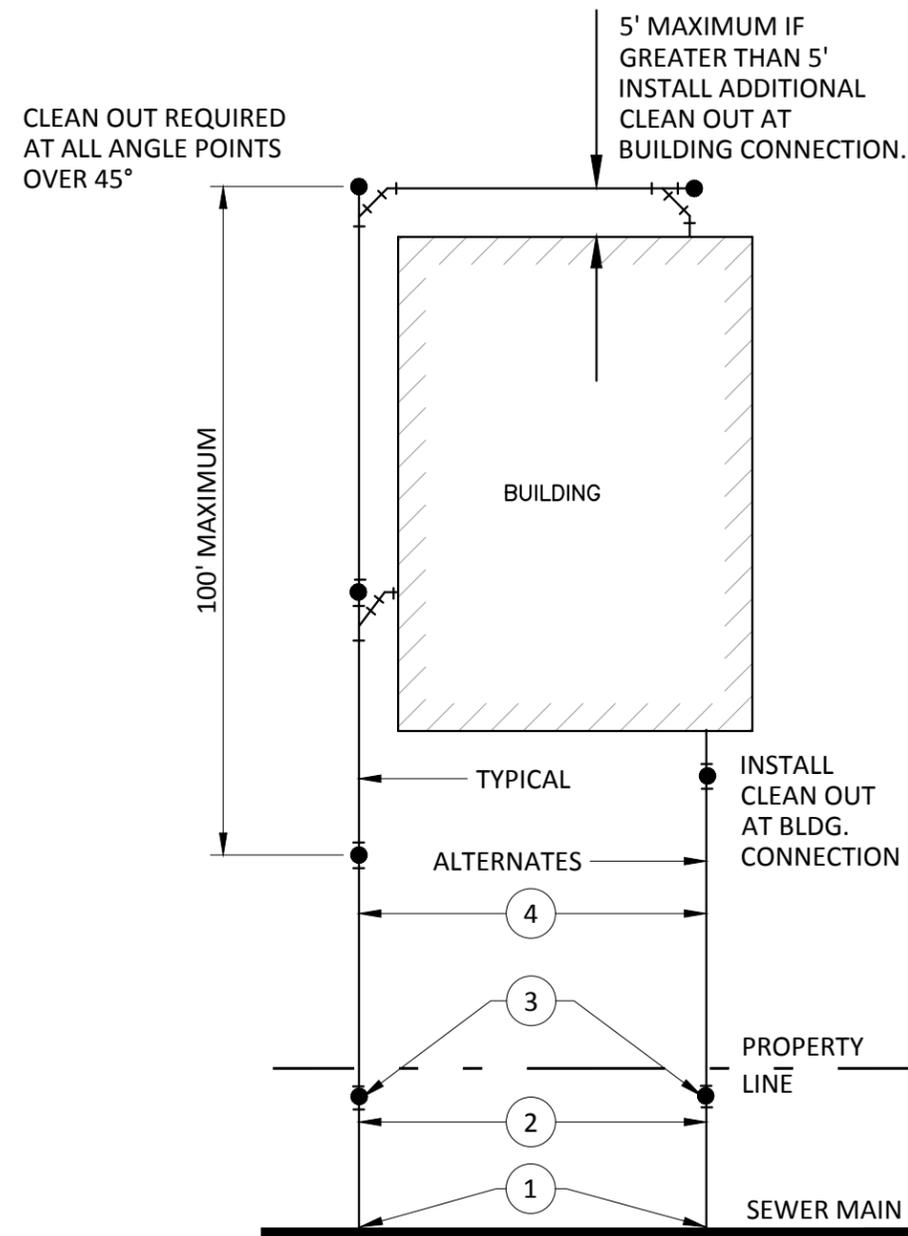


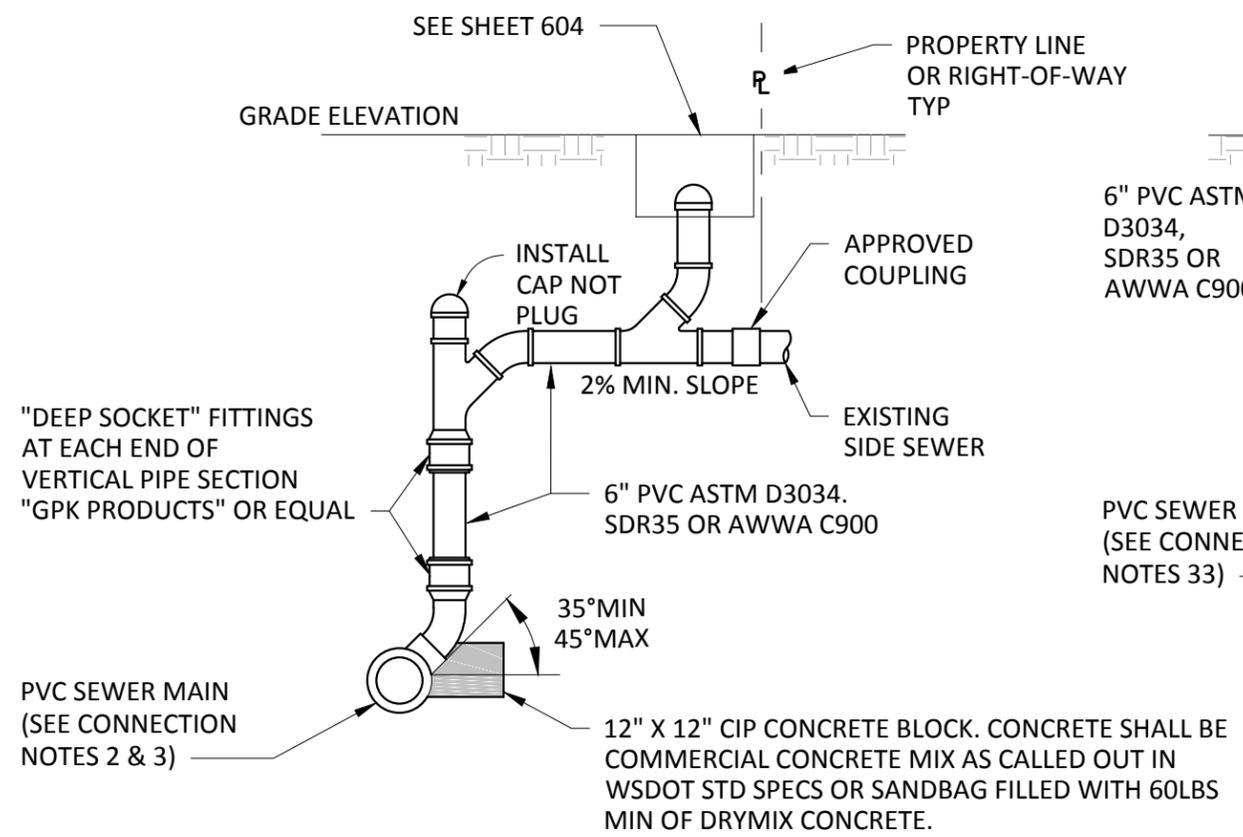
NOTES

1. CONNECTION TO SEWER MAIN PER SEC. 7 OF STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS AND STANDARD DRAWING 602.
2. INSTALL 6" MINIMUM PIPE SIZE IN RIGHT OF WAY.
3. INSTALL 6" CLEAN OUT PER STANDARD DRAWING 604.
4. PRIVATE SIDE SEWER PIPE DIAMETER:
4" MINIMUM FOR SINGLE FAMILY
6" MINIMUM FOR ALL OTHER USES.

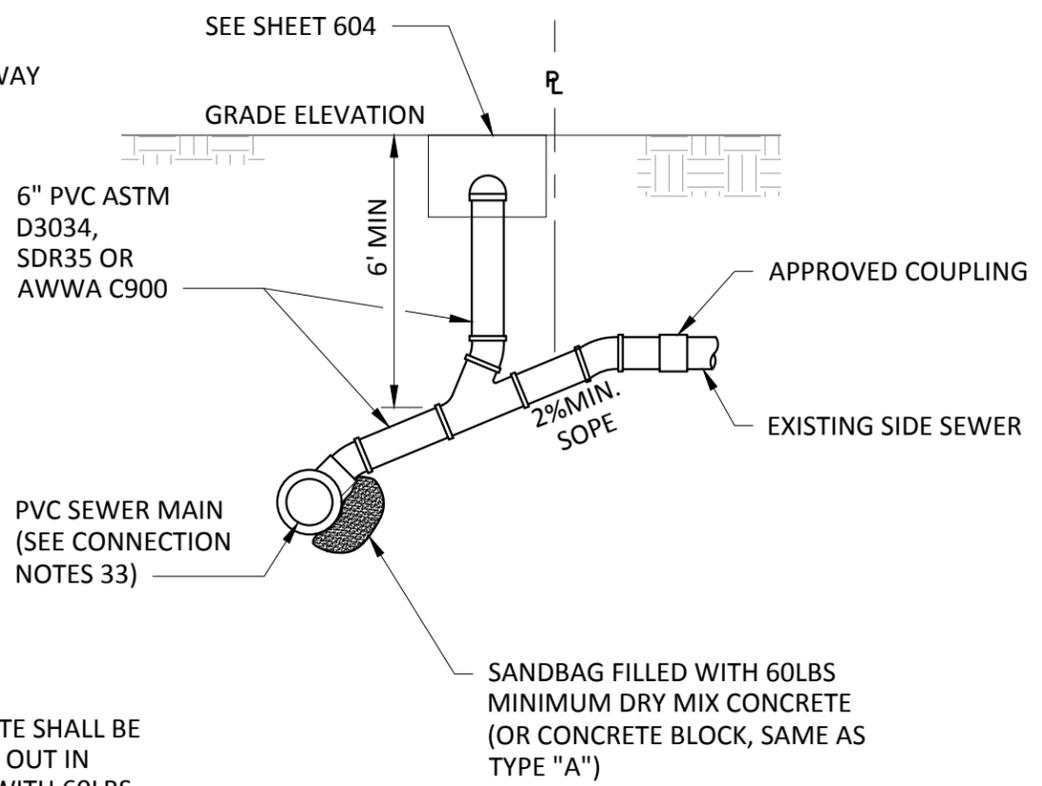
GENERAL NOTES

1. SEE SECTION 7 OF STANDARD SPECIFICATIONS FOR ROADS; BRIDGE AND MUNICIPAL CONSTRUCTION WSDOT/APWA AND CITY SPECIAL PROVISIONS SECTION 7-18 FOR DETAILS AND REQUIREMENTS ON LATERALS.
2. ALL CLEAN OUT'S ON PRIVATE PROPERTY ARE TO BE ADJUSTED TO GRADE IF IN PAVED AREAS PER STANDARD DRAWING 604.
3. CLEAN OUT'S ARE TO BE CONSTRUCTED WITH WYES OR SANITARY "T"'S (SWEEPS). STRAIGHT "T"'S ARE NOT PERMITTED.
4. ALLOWABLE GRADES ARE 2% (1/4"/FT) MINIMUM TO 100% (FT/FT) MAXIMUM.
5. SEWER MUST BE STRAIGHT BETWEEN ANGLE POINTS, CHANGES IN LINE OR GRADE SHALL BE MADE WITH APPROVED FITTINGS.
6. NORMALLY ONLY ONE(1) CONNECTION TO THE SEWER MAIN PER BLDG. IS ALLOWED. TWO (2) DIFFERENT LAYOUTS ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY!

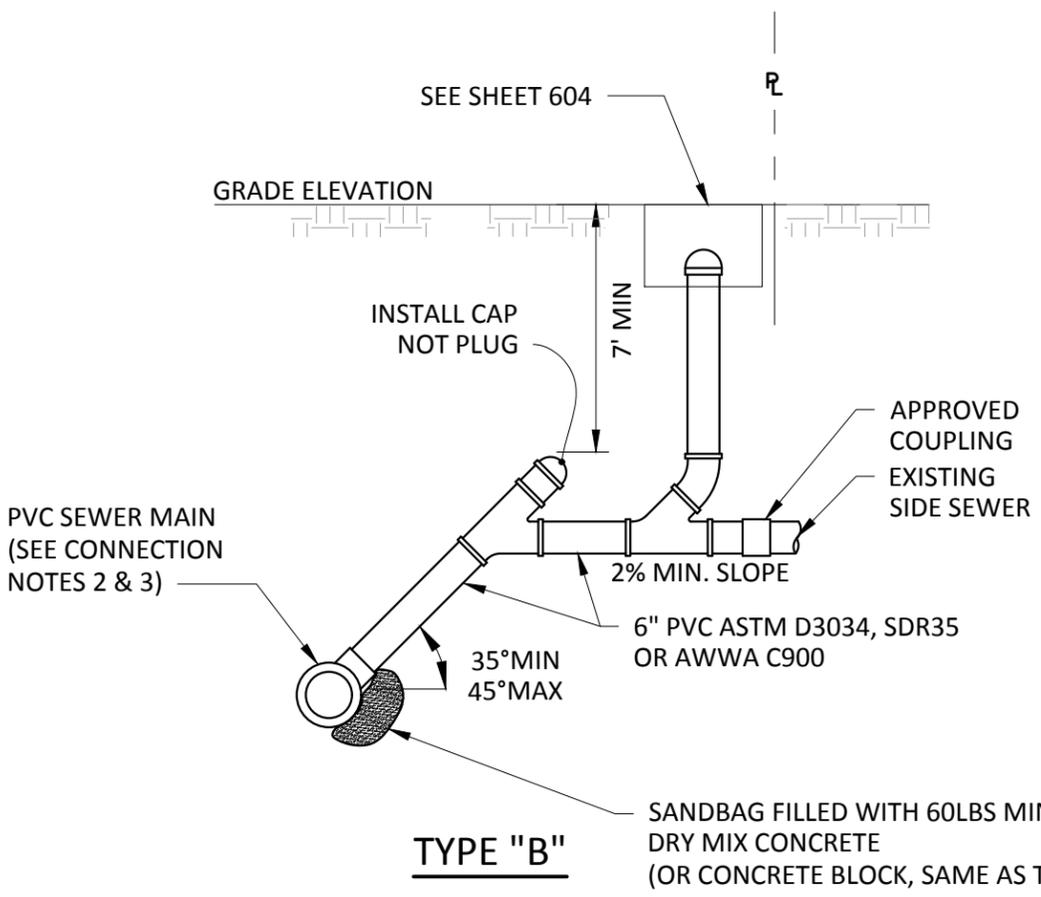




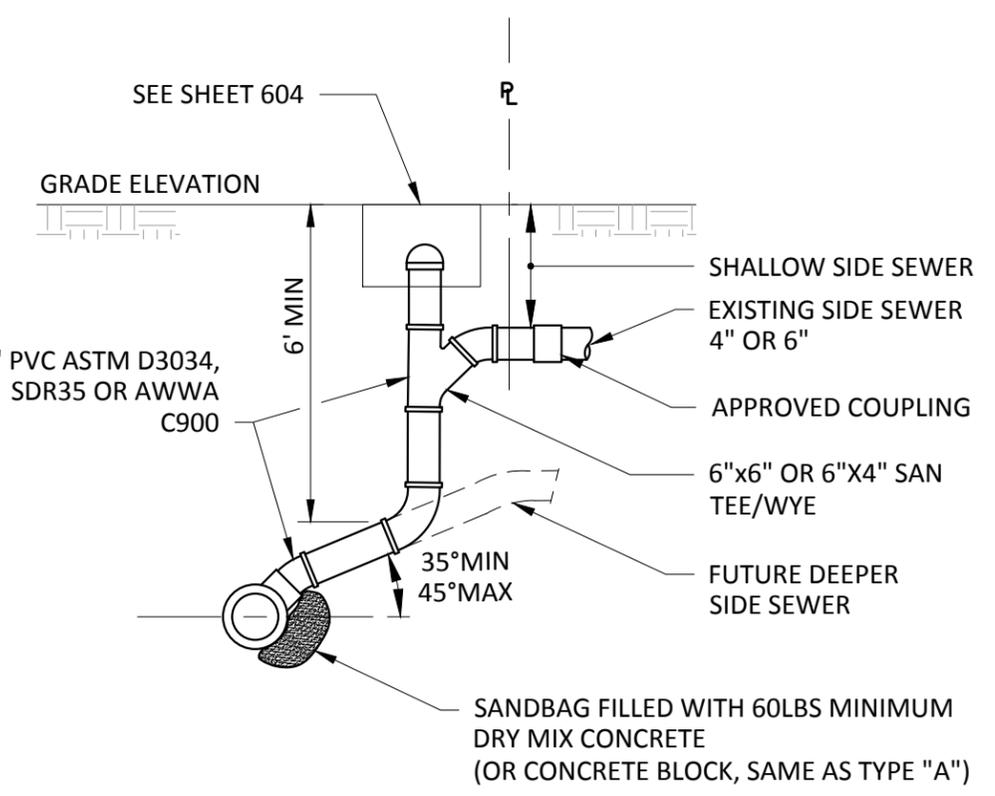
TYPE "A"



TYPE "C"



TYPE "B"



TYPE "D"

- NOTES**
1. PVC SIDE SEWER CONNECTIONS TO PVC NEW MAINS SHALL BE FACTORY TEES.
 2. TYPE A & B SHALL BE USED ONLY WHEN SEWER MAIN DEPTH EXCEEDS 15 FEET OR AS APPROVED BY THE ENGINEER. TYPE D SHALL BE USED WHEN EXISTING SIDE SEWER IS SHALLOW (LESS THAN 6' DEPTH AT PROPERTY LINE)
 3. CONNECTIONS TO EXISTING CONCRETE SEWER MAINS SHALL BE MADE PER STANDARD DRAWINGS 612 & 613 OR BY APPROVED MANUFACTURED CONCRETE TEE.
 4. SEE STANDARD DRAWING 604. WHERE RING AND COVER INSTALLATIONS ARE SHOWN FOR PAVED AND UNPAVED AREAS, FIELD CONDITIONS WILL DICTATE WHICH INSTALLATION IS APPROPRIATE.
 5. CONNECTIONS TO EXISTING HDPE SEWER MAINS SHALL BE MADE PER STANDARD DRAWING 612 OR SIDE-WALL FUSION.

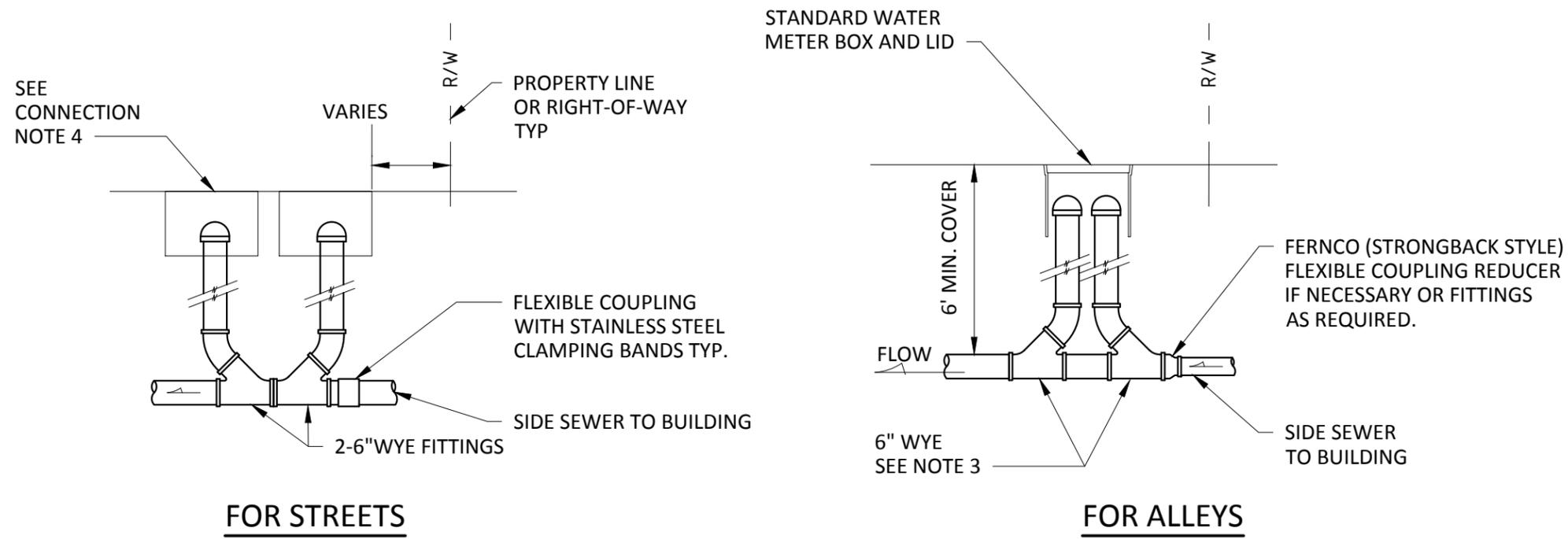
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 CITY OF EVERETT EVERETT PUBLIC WORKS DEPARTMENT		City Engineer	Section Manager	CAD Manager	Drawn By	Current Rev Date
		RYAN SASS	DAVID VOIGT	PAUL WILHELM	WRB	12/30/2016
TYPICAL SIDE SEWER CONNECTIONS TYPE A, B, C, & D						STANDARD DRAWING No. 602

NOTES

1. OPPOSING CLEANOUTS SHALL BE INSTALLED.
2. CLEAN-OUT PIPE AND FITTINGS SHALL BE PVC ASTM D3034, SDR 35 OR AWWA C900.
3. SANITARY TEE OR WYE FITTINGS SHALL BE INSTALLED. STRAIGHT TEES ARE NOT ALLOWED.
4. TWO-WAY SEWER CLEAN OUTS ARE ONLY REQUIRED WHERE DIRECTED BY THE CITY.

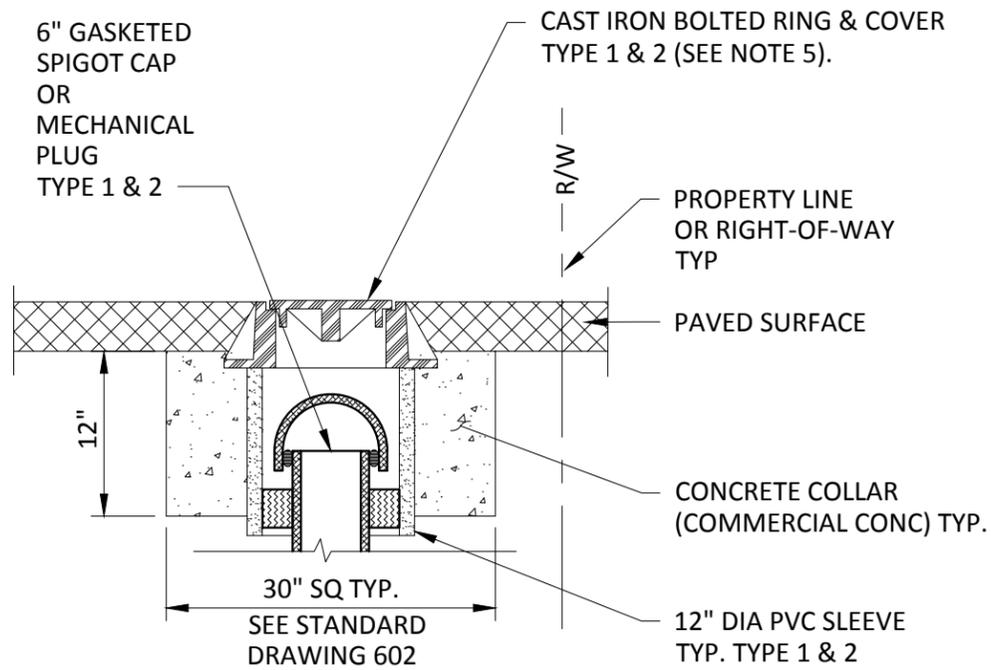


TWO-WAY SEWER CLEANOUT

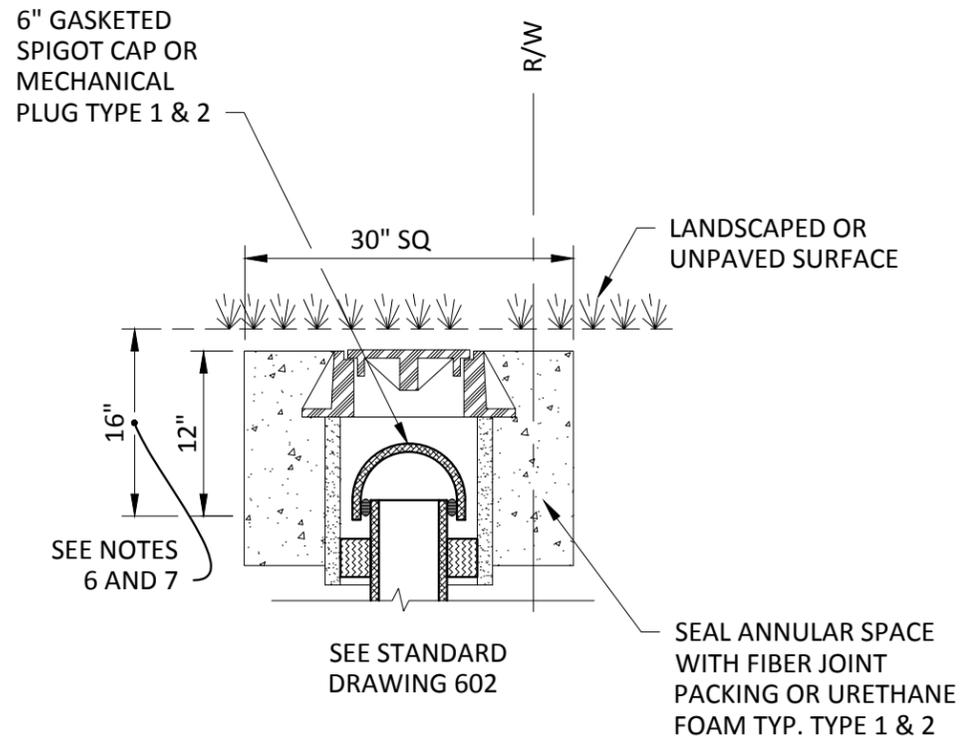
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		<p>CITY OF EVERETT EVERETT PUBLIC WORKS DEPARTMENT</p>	
City Engineer RYAN SASS	Section Manager DAVID VOIGT	CAD Manager PAUL WILHELM	Drawn By ESH
<p>TITLE TYPICAL SIDE SEWER CONNECTIONS TWO-WAY CLEAN-OUTS</p>			<p>Current Rev Date 12/30/2016 STANDARD DRAWING No. 603</p>

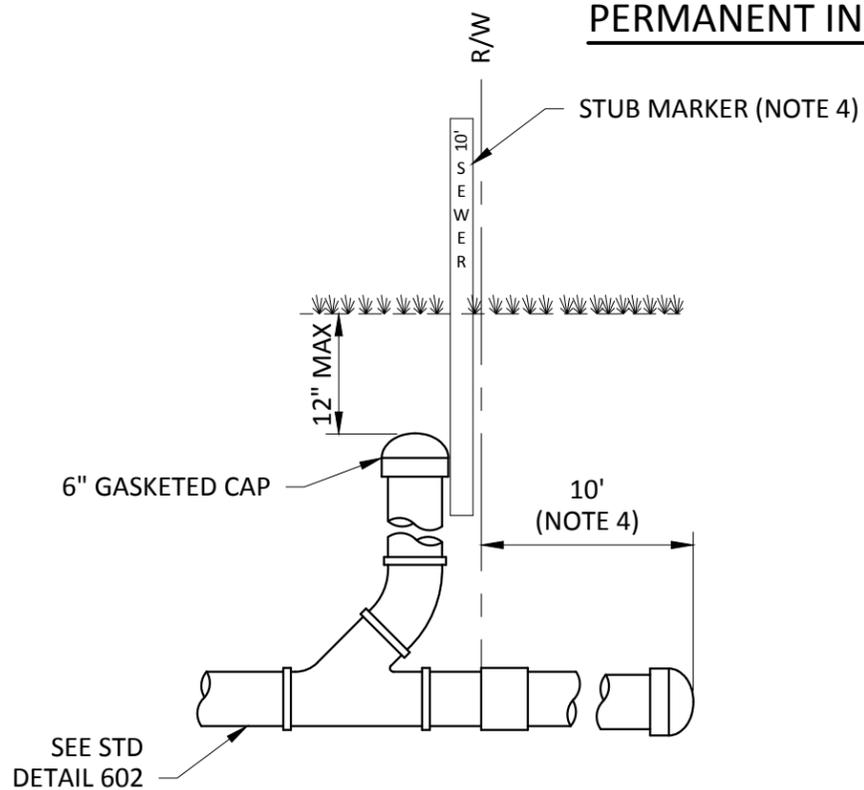


**TYPE 1
PAVED AREAS**

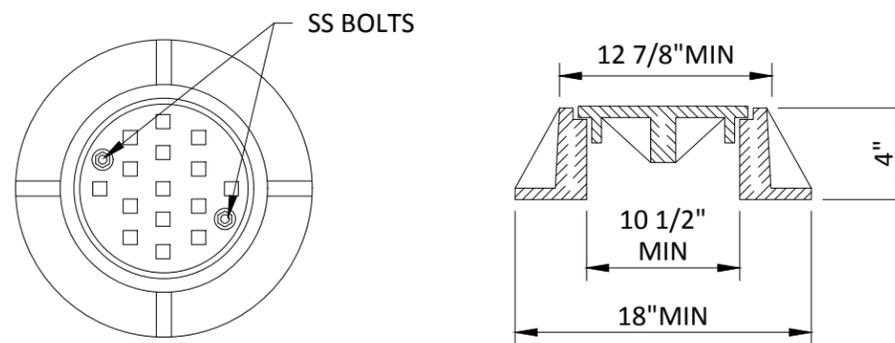


**TYPE 2
UNPAVED AREAS**

PERMANENT INSTALLATIONS



**TYPE 3
UNPAVED AREA
TEMPORARY INSTALLATION FOR NEW DEVELOPMENT**



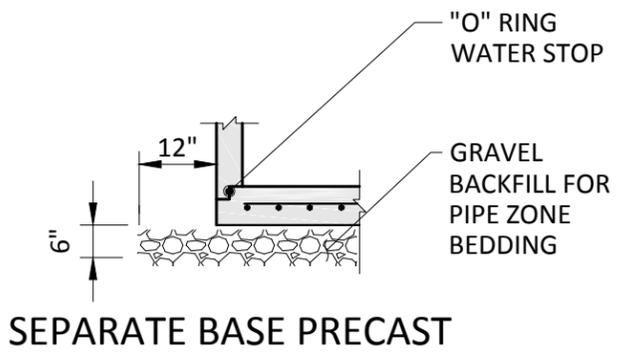
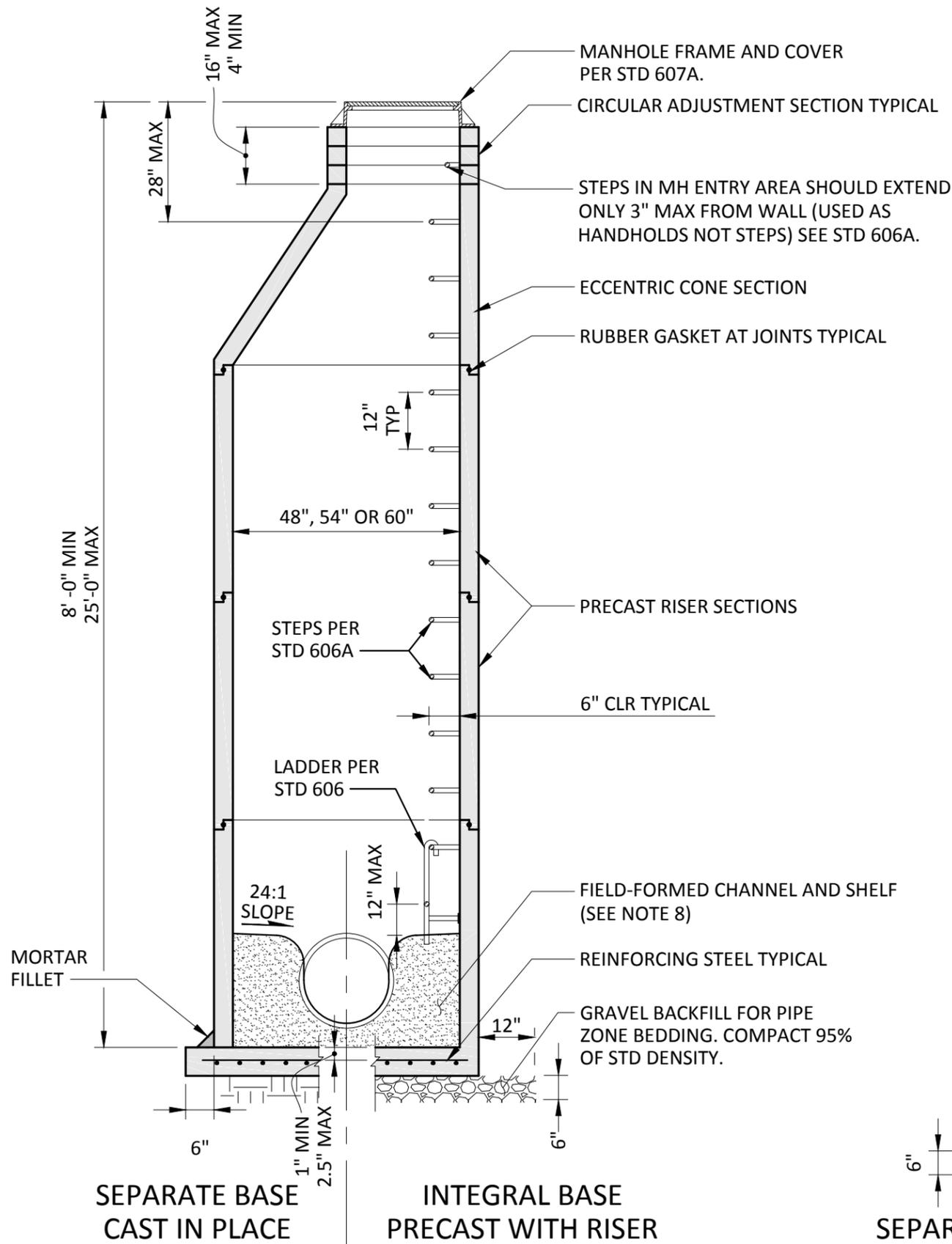
PLAN
SECTION
12" CAST IRON BOLTED RING AND COVER
(SEE NOTE 5)

NOTES

1. CLEAN-OUT PIPE AND FITTINGS SHALL BE PVC, ASTM D3034, SDR 35 OR AWWA C900.
2. A SANITARY TEE MAY BE INSTALLED IN LIEU OF A WYE AS SHOWN. STRAIGHT TEES ARE NOT ACCEPTABLE.
3. SEWER STUB WILL BE EXTENDED 10' BEYOND PROPERTY LINE TO PREVENT DAMAGE TO CLEAN-OUT AND MINIMIZE CONFLICTS WITH OTHER UTILITIES WHEN SERVICE TO BUILDING IS INSTALLED.
4. TYPE 3 TEMPORARY INSTALLATIONS (NEW DEVELOPMENT) SHALL HAVE A PRESSURE TREATED 2"X4" STUB MARKER THAT EXTENDS DOWN TO A MIN OF 24" BELOW GROUND. A MIN OF 36" SHALL EXTEND ABOVE GROUND. STUB MARKER SHALL BE PAINTED WITH WHITE TRAFFIC PAINT. THE WORD "SEWER" AND THE DEPTH IN FEET FROM GROUND SURFACE TO SEWER STUB PIPE INVERT SHALL BE PAINTED ON THE MARKER WITH 3" HIGH BLACK PAINTED LETTERS.
5. CAST IRON BOLTED RING AND COVER SHALL BE EAST JORDAN IRON WORKS NO. 3660CPT OR EQUAL.
6. RING AND COVER INSTALLATION IS SHOWN FOR PAVED AND UNPAVED AREAS, FIELD CONDITIONS WILL DICTATE WHICH INSTALLATION IS APPROPRIATE.
7. RING AND COVER WITH CONCRETE COLLAR MAY BE PLACED AT GROUND SURFACE IN UNPAVED AREAS IF DESIRED.

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 CITY OF EVERETT EVERETT PUBLIC WORKS DEPARTMENT		City Engineer RYAN SASS	Section Manager DAVID VOIGT	CAD Manager PAUL WILHELM	Drawn By ESH	Current Rev Date 12/30/2016
TITLE SEWER CLEAN-OUT TYPE 1, 2, 3 & 12" CAST IRON RING & COVER						STANDARD DRAWING No. 604



NOTES

1. MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M-199 (ASTM C 478) UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN STANDARD SPECIFICATIONS.
2. ALL REINFORCED CAST IN PLACE CONCRETE SHALL BE CLASS 4000. NON-REINFORCED CONCRETE IN CHANNEL AND SHELF SHALL BE 7 SACK MIX SAND AND CEMENT GROUT. ALL PRECAST CONCRETE SHALL BE CLASS 4000.
3. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS FOR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OR 2" MINIMUM.
4. ALL BASE REINFORCING STEEL SHALL HAVE A MINIMUM YIELD STRENGTH OF 60,000 PSI AND BE PLACED IN THE UPPER HALF OF THE BASE WITH 1" MINIMUM CLEARANCE.
5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS MANHOLE WALL THICKNESS.
6. MANHOLE DIA. DEPENDS ON: SIZE, LOCATION AND NUMBER OF PENETRATIONS FOR PIPES. MANHOLE DESIGN AND SIZE SHALL BE APPROVED AND WARRANTED BY THE MANHOLE SUPPLIER.
7. FOR HEIGHTS OVER 25' MANHOLE BASE SLAB SHALL BE DESIGNED BY A STRUCTURAL ENGINEER.
8. CONCRETE CHANNEL AND SHELF SHALL BE FIELD-FORMED EXCEPT WHERE APPROVED IN ADVANCE BY CITY.

NOTE: KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM TO 2.5" MAXIMUM.

MANHOLE DIMENSIONS TABLE						
DIA	WALL THICKNESS	BASE THICKNESS	MAXIMUM KNOCK OUT SIZE	MINIMUM DISTANCE BWT KNOCKOUTS	BASE REINFORCING STEEL IN ² /FT IN EACH DIRECTION	
					SEPARATE BASE	INTEGRAL BASE
48"	4"	6"	36"	8"	0.23	0.15
54"	4.5"	8"	42"	8"	0.19	0.19
60"	5"	8"	48"	8"	0.25	0.25

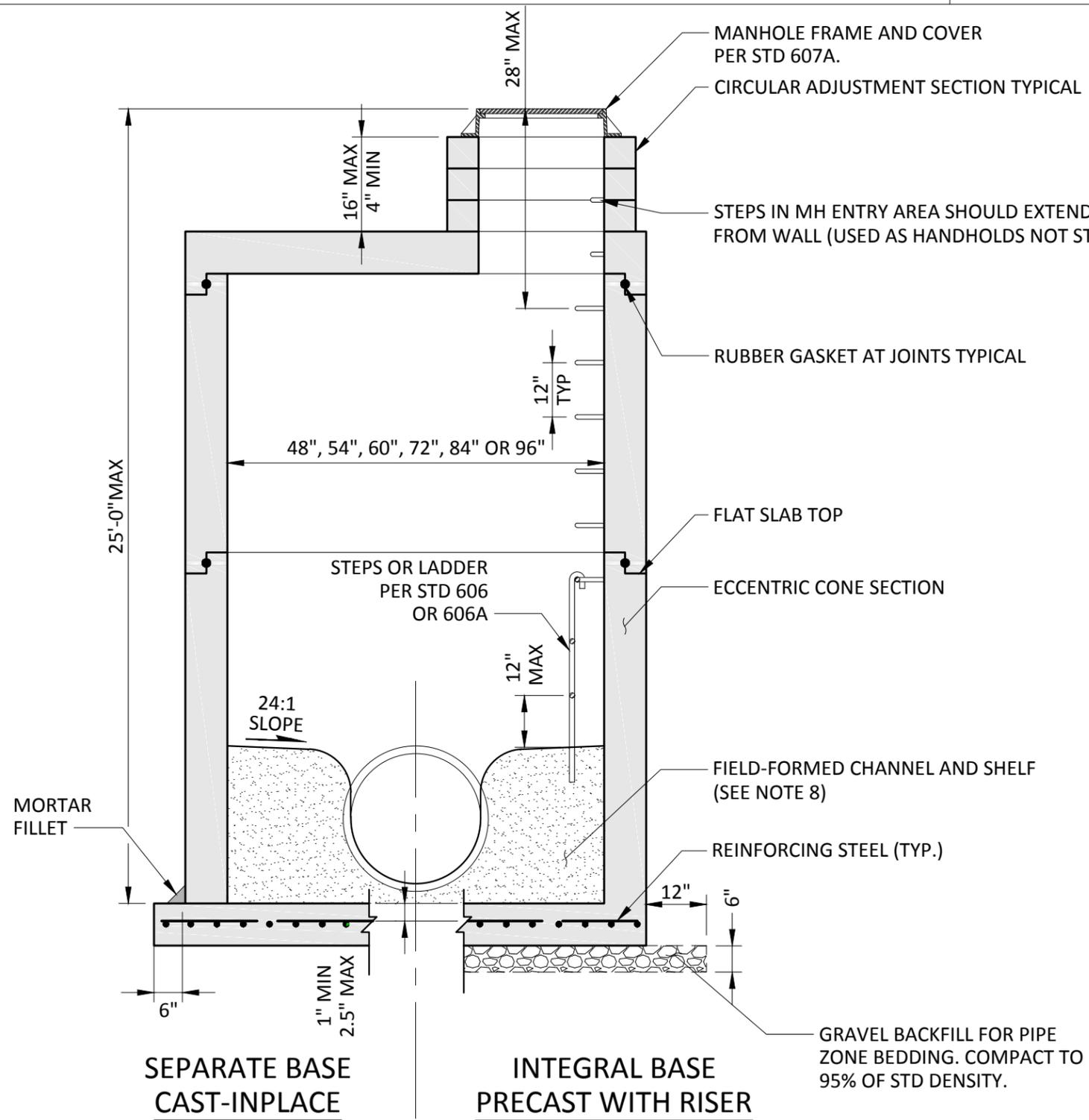
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CITY OF EVERETT
EVERETT PUBLIC WORKS DEPARTMENT

City Engineer RYAN SASS	Section Manager DAVID VOIGT	CAD Manager PAUL WILHELM	Drawn By ESH	Current Rev Date 12/30/2016
<p>TYPE 1 MANHOLE 48", 54" & 60"</p>				<p>STANDARD DRAWING No. 605</p>

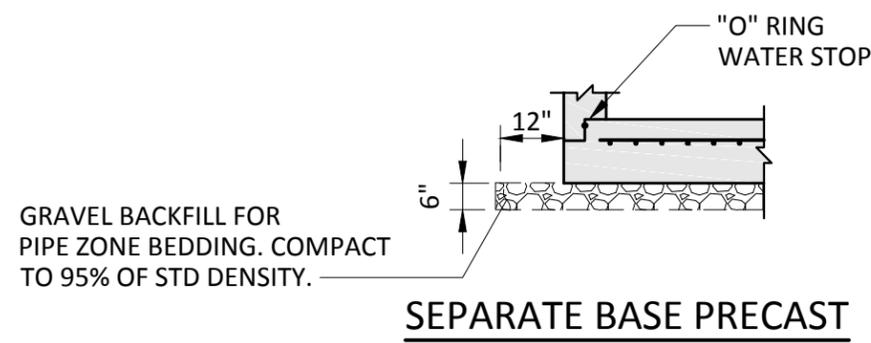


NOTES

1. MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M-199 (ASTM C 478) UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN STANDARD SPECIFICATIONS.
2. ALL REINFORCED CAST IN PLACE CONCRETE SHALL BE CLASS 4000. NON-REINFORCED CONCRETE IN CHANNEL AND SHELF SHALL BE 7 SACK MIX SAND AND CEMENT GROUT. ALL PRECAST CONCRETE SHALL BE CLASS 4000.
3. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS FOR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OR 2" MINIMUM.
4. ALL BASE REINFORCING STEEL SHALL HAVE A MINIMUM YIELD STRENGTH OF 60,000 PSI AND BE PLACED IN THE UPPER HALF OF THE BASE WITH 1" MINIMUM CLEARANCE.
5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS MANHOLE WALL THICKNESS.
6. MANHOLE DIA. DEPENDS ON: SIZE, LOCATION AND NUMBER OF PENETRATIONS FOR PIPES. MANHOLE DESIGN AND SIZE SHALL BE APPROVED AND WARRANTED BY THE MANHOLE SUPPLIER.
7. FOR HEIGHTS OVER 25' MANHOLE BASE SLAB DESIGN SHALL BE DESIGNED BY A STRUCTURAL ENGINEER.
8. CONCRETE CHANNEL AND SHELF SHALL BE FIELD-FORMED EXCEPT WHERE APPROVED IN ADVANCE BY CITY.

MANHOLE DIMENSIONS TABLE						
DIA	WALL THICKNESS	BASE THICKNESS	MAXIMUM KNOCK OUT SIZE	MINIMUM DISTANCE BWT KNOCKOUTS	BASE REINFORCING STEEL IN ² /FT IN EACH DIRECTION	
					SEPARATE BASE	INTEGRAL BASE
48"	4"	6"	36"	8"	0.23	0.15
54"	4.5"	8"	42"	8"	0.19	0.19
60"	5"	8"	48"	8"	0.25	0.25
72"	6"	8"	60"	12"	0.35	0.24
84"	8"	12"	72"	12"	0.39	0.29
96"	8"	12"	84"	12"	0.39	0.29

NOTE: KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM TO 2.5" MAXIMUM.



WSDOT STD PLAN B-15.60.00,
MANHOLE TYPE 3
ACCEPTABLE SUBSTITUTE

DRAFT

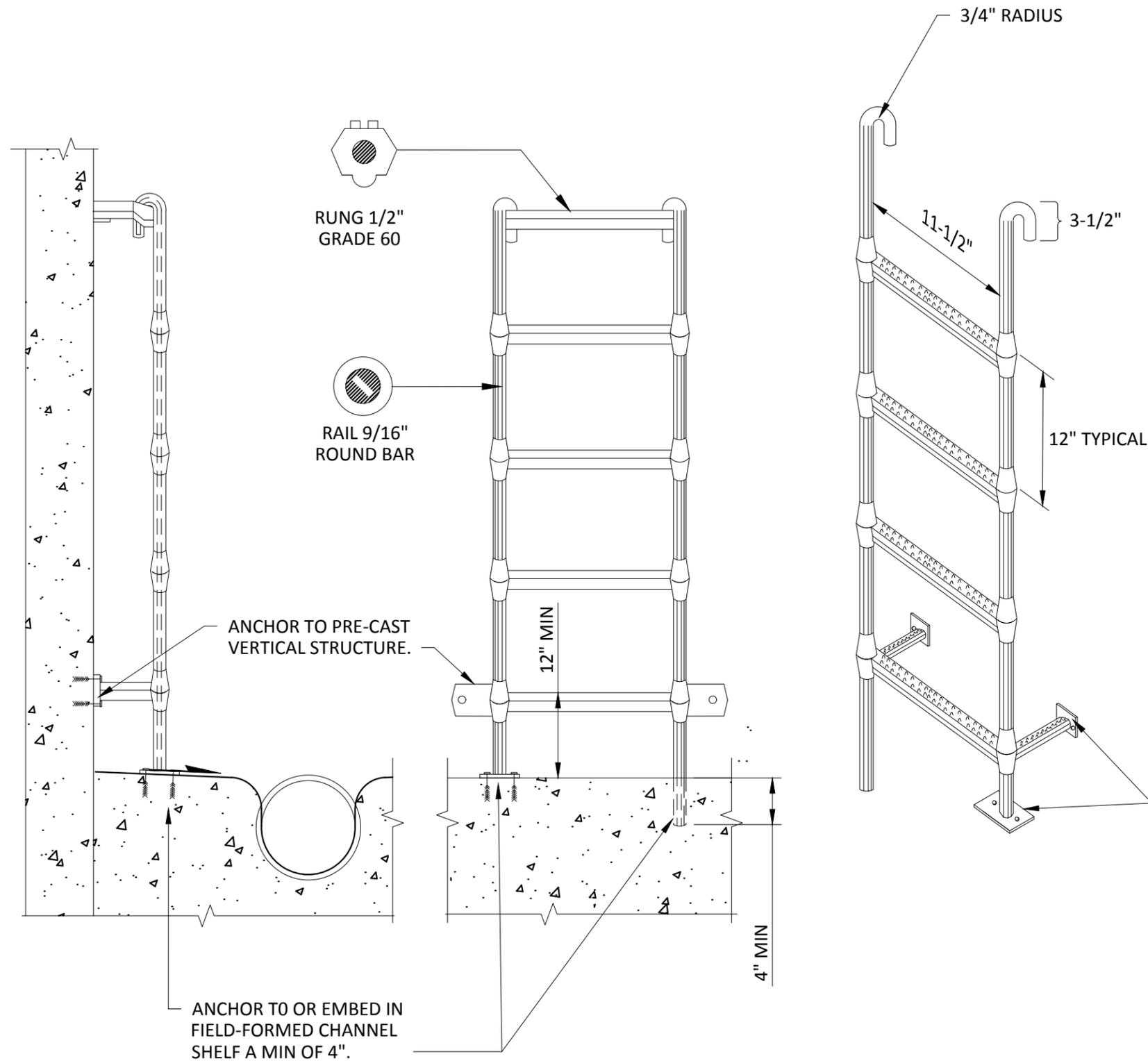


CITY OF EVERETT
EVERETT PUBLIC WORKS DEPARTMENT

City Engineer RYAN SASS	Section Manager DAVID VOIGT	CAD Manager PAUL WILHELM	Drawn By ESH	Current Rev Date 12/30/2016
<p>TITLE</p> <p>TYPE 3 SS OR CS MANHOLE 48", 54", 60", 72", 84" & 96" WITH 48" OR 54" RISER</p>				<p>STANDARD DRAWING No.</p> <p>607</p>

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NOTES

1. STEPS SHALL BE STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC CONFORMING TO:
 - (A) ASTM C 478 AND AASHTO M-199, ANCHOR-BOLTS SHALL HAVE A MINIMUM HORIZONTAL PULLOUT RATING OF 1500 LBS.
 - (B) ASTM A615 GRADE 60 (DEFORMED REINFORCING STEEL BAR).
 - (C) POLYPROPYLENE CONFORMS TO D-4101.
2. MANHOLE STEPS SHALL HAVE MOLDED SAFETY HAND GRIP. RED REFLECTORS ARE PREFERRED.
3. ALL FABRICATION DIMENSIONS INDICATED ARE MINIMUM.
4. THE ENTIRE POLYPROPYLENE PLASTIC MATERIAL SURROUNDING THE REINFORCING STEEL BAR SHALL BE CAST MONOLITHICALLY. MINIMUM COVER SHALL BE 3/16-INCH.
5. STEP RUNGS SHALL BE SPACED AT A MAXIMUM OF 14 INCHES.
6. STEPS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED MANUFACTURERS RECOMMENDED PROCEDURE.

ANCHOR PADS 2-3/4" X 2" WITH TWO 7/8" DIA HOLES ANCHOR USING TWO 1/2" DIA 3" STAINLESS STEEL ANCHOR BOLTS

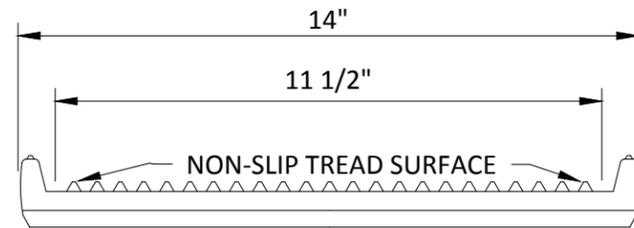


City Engineer RYAN SASS	Section Manager DAVID VOIGT	CAD Manager PAUL WILHELM	Drawn By ESH	Current Rev Date 12/30/2016
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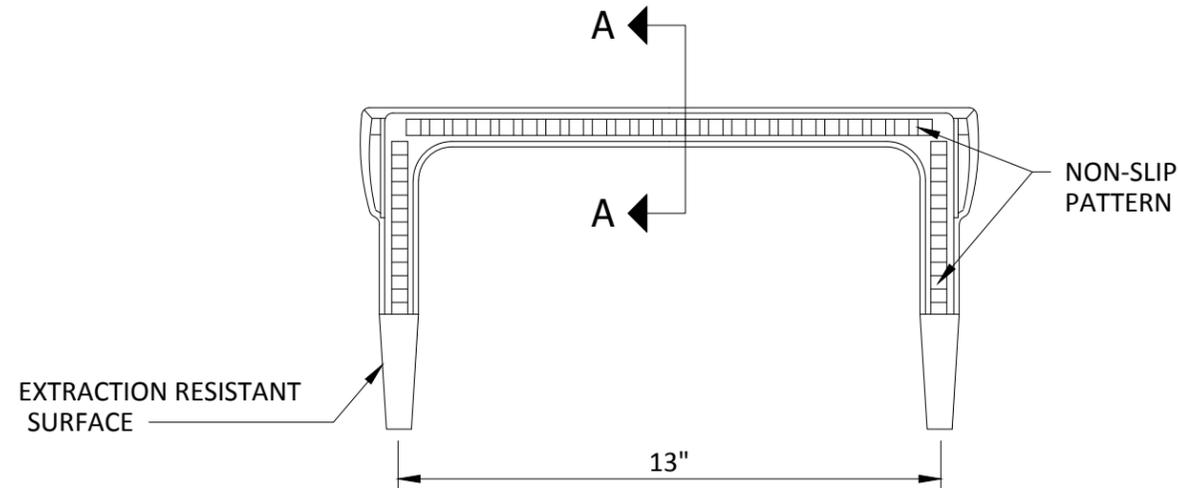
POLYPROPYLENE LADDER

608

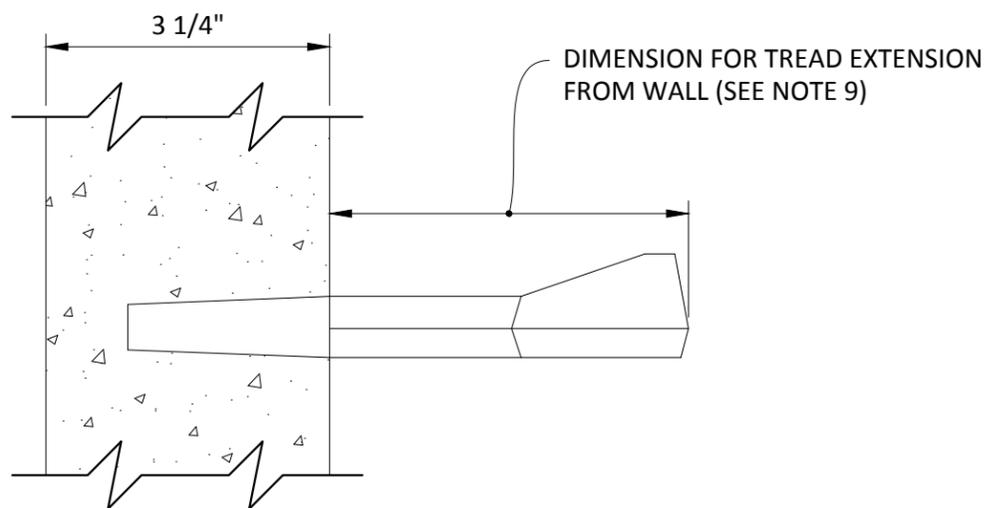
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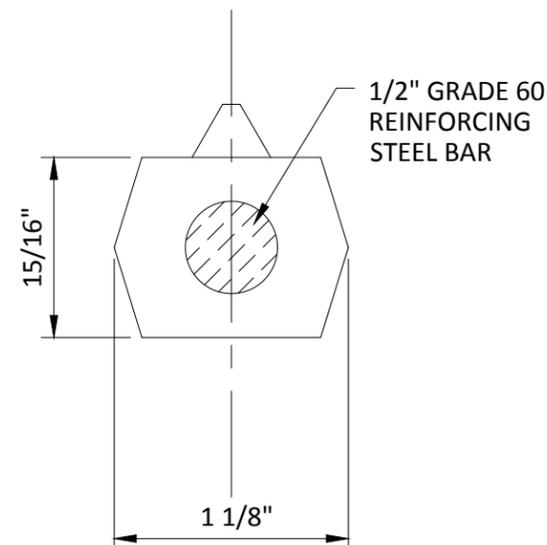
ELEVATION



PLAN



SIDE ELEVATION



SECTION A-A

NOTES

1. STEPS SHALL BE STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC CONFORMING TO:
 - A. ASTM D 478 AND AASHTO M-199, MINIMUM HORIZONTAL PULLOUT RATING SHALL BE 1500 LBS.
 - B. ASTM A 615 GRADE 60 (DEFORMED REINFORCING STEEL BAR).
2. ONLY STEPS APPROVED BY THE ENGINEER SHALL BE USED.
3. ALL FABRICATION DIMENSIONS INDICATED ARE MINIMUM.
4. THE MINIMUM TOTAL CROSS-SECTIONAL AREA OF THE EXPOSED PORTION OF THE STEP, INCLUDING THE 1/2-INCH DEFORMED REINFORCING STEEL BAR, AND EXCLUDING THE NON-SLIP TREAD SURFACE, SHALL BE ONE SQUARE INCH
5. THE ENTIRE POLYPROPYLENE PLASTIC MATERIAL SURROUNDING THE REINFORCING STEEL BAR SHALL BE CAST MONOLITHICALLY. MINIMUM COVER SHALL BE 3/16-INCH.
6. THE FOLLOWING DIMENSIONS SHALL APPLY UNLESS OTHERWISE NOTED ON THE DRAWINGS OR STANDARD PLANS FOR SPECIFIC STRUCTURES: D=6" ±1/4", E=3 1/4" ±1/4"
7. STEP RUNGS SHALL BE SPACED AT A MAXIMUM OF 14-INCHES.
8. STEPS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED MANUFACTURERS RECOMMENDED PROCEDURE.
9. STEPS IN THE CONE AND RISER SECTIONS WILL HAVE 6" EXTENSION FROM WALL. STEPS INSTALLED ABOVE CONE OR TOP SLAB SHALL BE A MAX OF 3" EXTENSION FROM WALL AND USED AS HANDHOLD. ALSO SEE 605A, 605B OR 605C.

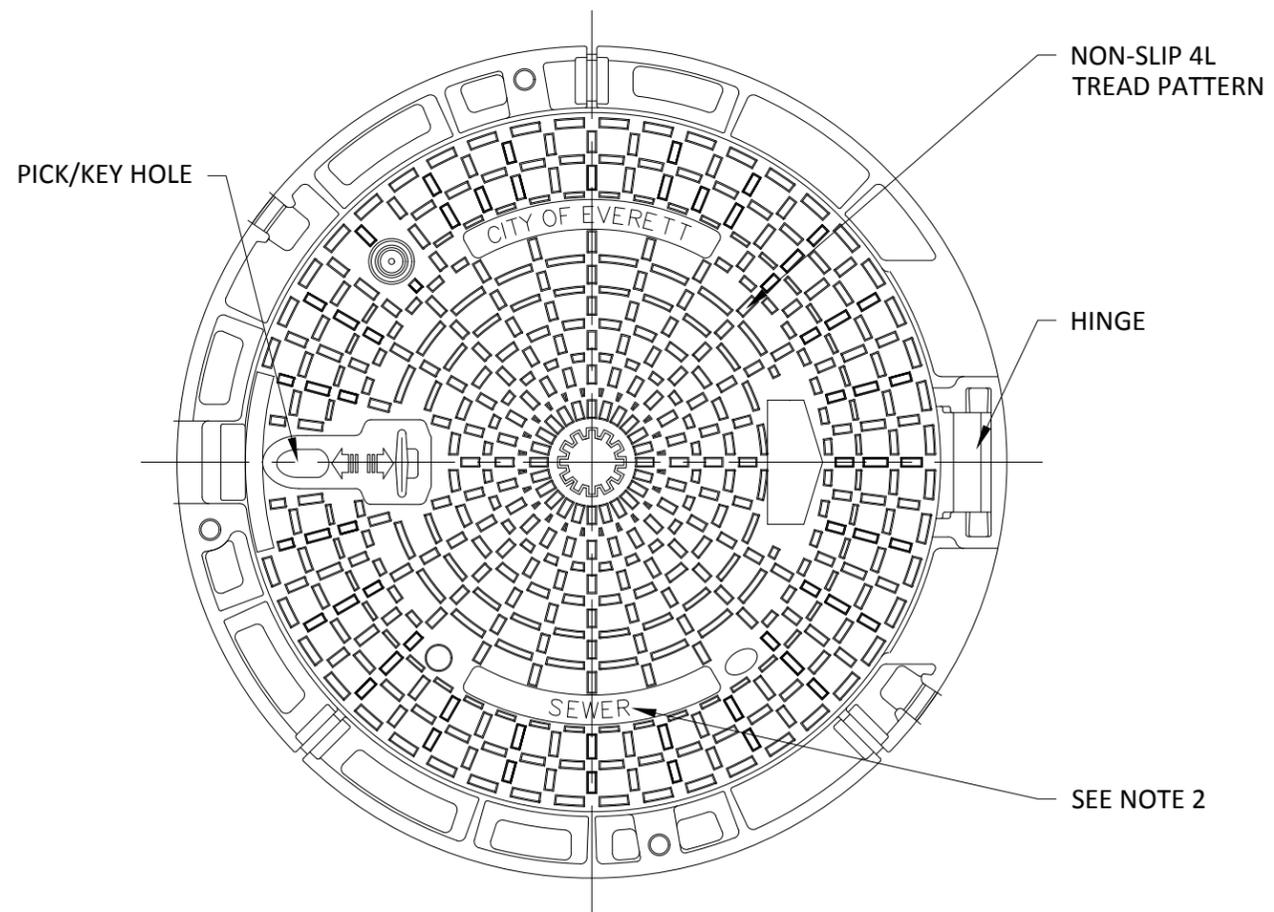
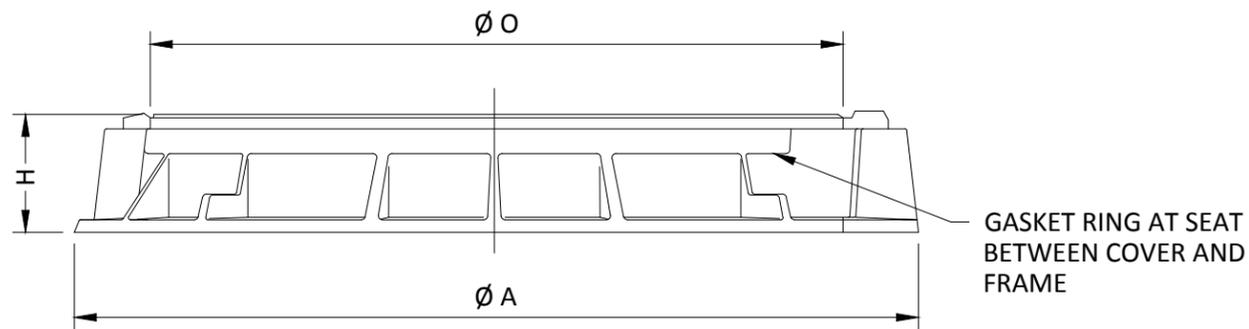
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City Engineer RYAN SASS	Section Manager DAVID VOIGT	CAD Manager PAUL WILHELM	Drawn By ESH	Current Rev Date 12/30/2016
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TITLE ALTERNATE POLYPROPYLENE PLASTIC STEPS	STANDARD DRAWING No. 609
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DRAFT



NOTES

1. MANHOLE COVER AND FRAME SHALL BE AS MANUFACTURED BY PAMREX, EAST JORDAN IRON WORKS (EJIW) OR APPROVED EQUAL. COVER SHALL BE MANUFACTURED FROM DUCTILE IRON, ASTM A536.
2. COVER SHALL BE STAMPED "SEWER", OR "DRAINAGE" DEPENDING ON APPLICATION.
3. COVERS SHALL BE HINGED AND INCORPORATE A 90 DEGREE SAFETY CATCH BLOCKING SYSTEM TO PREVENT ACCIDENTAL CLOSURE AND REMOVABLE AT 120° OPEN. FRAME AND COVER SHALL EXCEED AASHTO H20, M306 OR M105 LOADINGS..
4. FRAMES SHALL BE CIRCULAR, INCORPORATE A SEATING RING AND A FITTED PLUG IN EACH HINGE HOUSING, AND BE AVAILABLE IN A 24 INCH MINIMUM CLEAR OPENING. THE STANDARD FRAME DEPTH SHALL NOT EXCEED 5 INCHES, AND THE FLANGE SHALL INCORPORATE BEDDING SLOTS, BOLT HOLES, AND LIFTING EYES.
5. SHALL BE USED FOR ALL NEW SEWER MANHOLES AND WHERE EXISTING STANDARD MANHOLE FRAME AND COVER ARE TO BE REPLACED.

DIMENSIONS (INCHES)			REFERENCE	MANUFACTURE
A	O	H		
33-1/2	24	4	CDPA60EH	PAMREX
34	24	4	00104042L01	EJIW

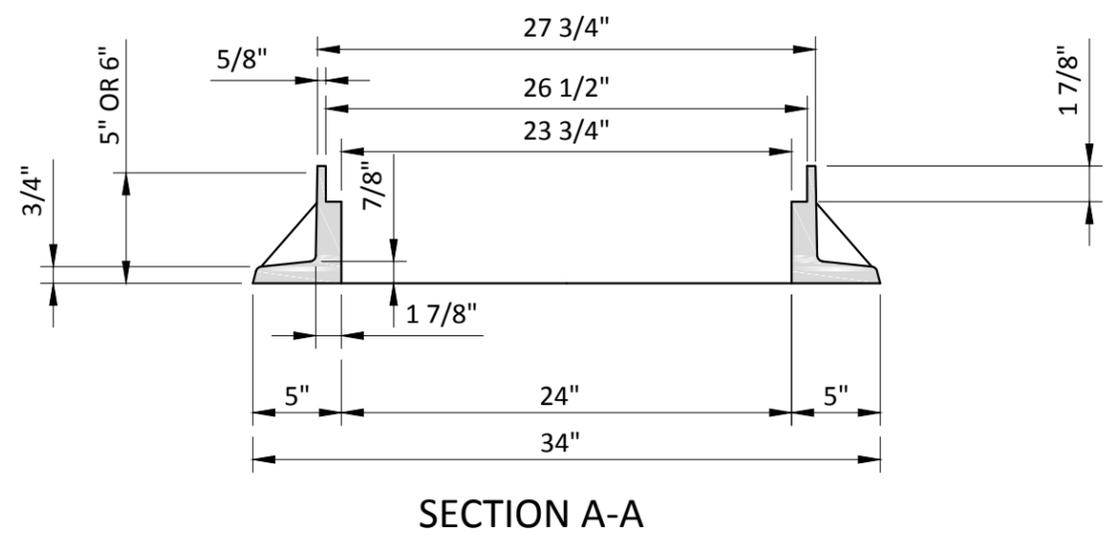
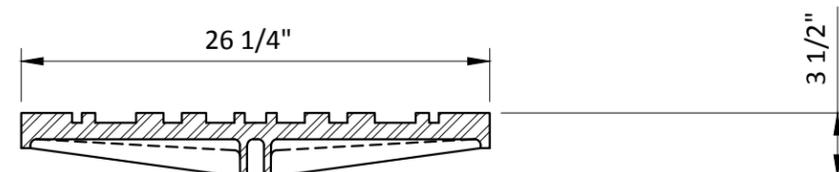
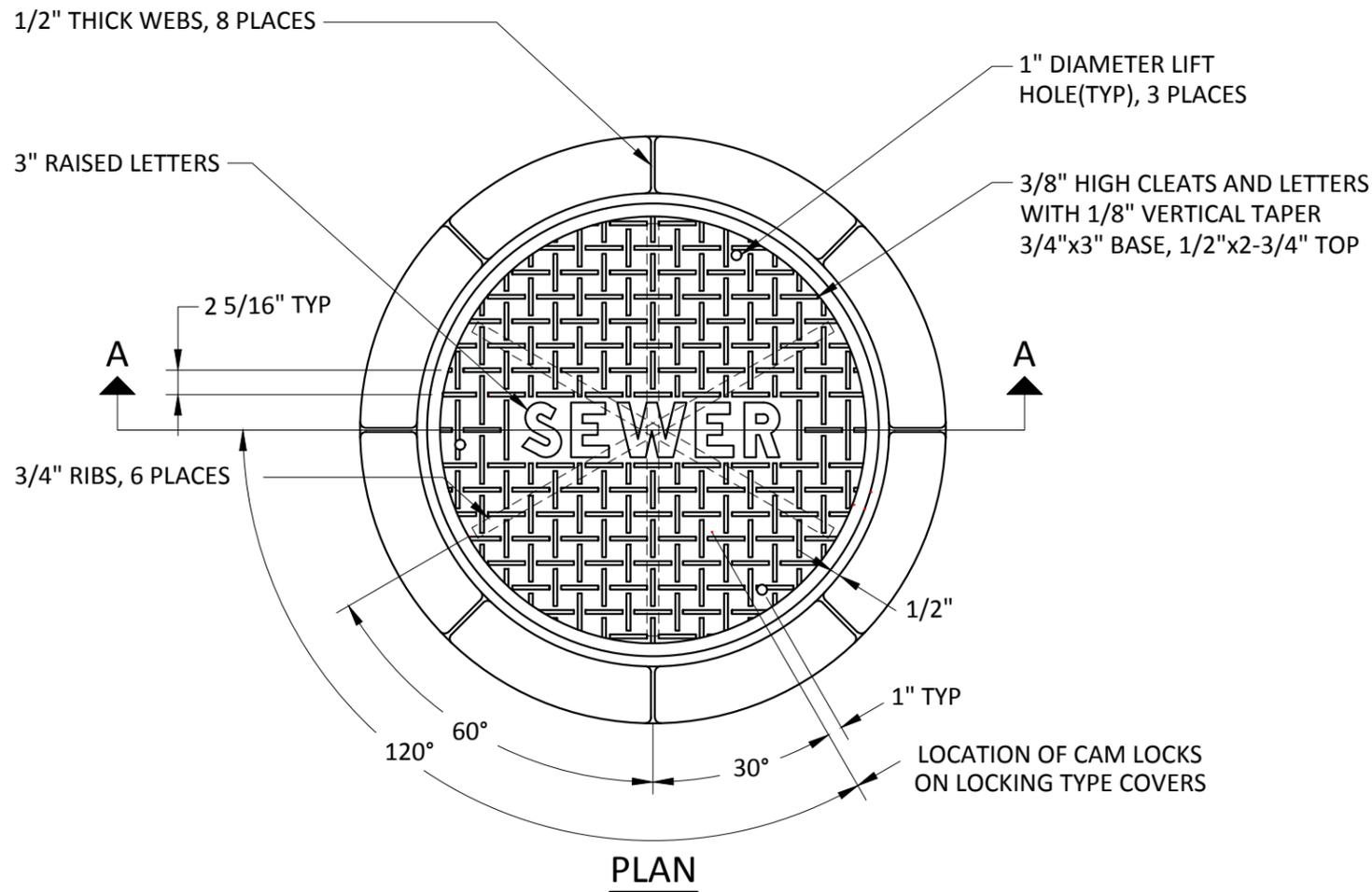
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CITY OF EVERETT

EVERETT PUBLIC WORKS DEPARTMENT

City Engineer RYAN SASS	Section Manager DAVID VOIGT	CAD Manager PAUL WILHELM	Drawn By ESH	Current Rev Date 12/30/2016
HINGED MANHOLE FRAME & COVER				610



NOTES

1. MANHOLE FRAMES SHALL BE GRAY IRON CONFORMING TO THE REQUIREMENTS OF AASHTO M 105, GRADE 30B.
2. MANHOLE COVER TO BE DUCTILE IRON CONFORMING TO ASTM A536, GR 80-55-06
3. LOCKING COVER TO BE USED AT OFF-STREET LOCATIONS AND OTHER LOCATIONS AS DIRECTED. THE COVER SHALL BE LOCKED DOWN WITH 3-5/8" S.S SOCKET HEAD CAP SCREWS.
4. FRAME AND COVER SHALL BE TESTED FOR ACCURACY OF FIT AND SHALL BE MARKED IN SETS FOR DELIVERY.
5. SHALL BE USED ONLY WHERE DIRECTED BY THE CITY OR APPROVED IN ADVANCE.

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 CITY OF EVERETT EVERETT PUBLIC WORKS DEPARTMENT		City Engineer	Section Manager	CAD Manager	Drawn By	Current Rev Date
		RYAN SASS	DAVID VOIGT	PAUL WILHELM	WRB	12/30/2016
STANDARD MANHOLE FRAME & COVER					STANDARD DRAWING No.	611

ONE LENGTH OF DUCTILE IRON PIPE CLASS 50 TO SOLID BEARING WHEN SPAN IS MORE THAN 48"

DUCTILE IRON PIPE TEE

TYPICAL MANHOLE PER STANDARD DRAWING 605, 606 OR 607

FLEXIBLE JOINT

NON-SHRINK CEMENT GROUT

BACKFILL WITH COMPACTED MATERIAL AS DIRECTED BY ENGINEER

DUCTILE IRON PIPE SLEEVE

3" MAX

2" MIN CLEARANCE

SHELF ELEVATION AT OR ABOVE HIGHEST CROWN

6" MIN

20' MAX

FIELD-FORMED

CHANNEL TO MAIN LINE

SECTION A-A

DIP 90° BEND MIN CLEAR TO BASE

COMMERCIAL CONCRETE BLOCK POURED IN PLACE

COMPACTED GRAVEL BASE

MANHOLE BASE SEE STD 605, 606 OR 607

NON-SHRINK GROUT

ELEVATION

6" MIN TYP

LOCATE MANHOLE STEPS AND LADDER ADJACENT TO DROP PIPE DISCHARGE

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WSDOT STD PLAN B-85.50.00 ACCEPTABLE SUBSTITUTE



City Engineer RYAN SASS	Section Manager DAVID VOIGT	CAD Manager PAUL WILHELM	Drawn By ESH	Current Rev Date 12/30/2016
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TITLE
OUTSIDE DROP MANHOLE CONNECTION
DUCTILE IRON PILE

STANDARD DRAWING No.

612

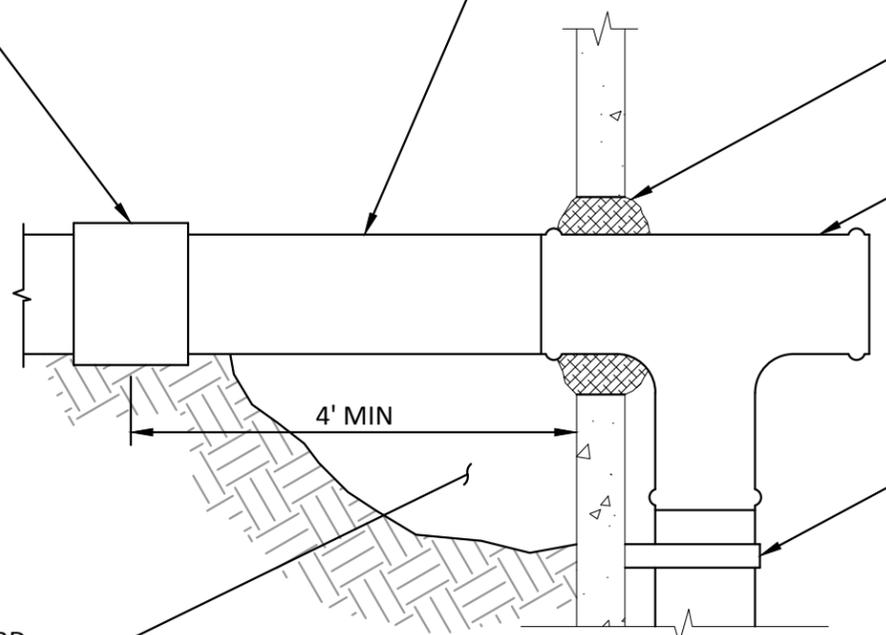
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GASKETED PIPE ADAPTOR ON SOLID BEARING

ONE LENGTH OF PVC ASTM 3034 (SDR) 35 PIPE TO SOLID BEARING

CORE DRILL WALL AND FILL ANNULAR SPACE WITH NON-SHRINK GROUT

APPROVED TEE



1" MIN 12 GAUGE STAINLESS STRAPS WITH STAINLESS STEEL BOLTS TO MANHOLE WALL WITH MAXIMUM SPACING OF 5 FEET

BACKFILL PER STANDARD DRAWING 601 (TYP)

2" MAX

12" MAX DIA PVC ASTM 3034, SDR 26 OR 35

MATCH CROWNS

SHELF ELEVATION AT OR ABOVE HIGHEST CROWN, TYP

APPROVED BEND CAST INTO BASE

MANHOLE SEE STANDARD DRAWING 605, 606 OR 607

CHANNEL TO MAIN LINE

NOTE: LOCATE MANHOLE STEPS AND LADDER ADJACENT TO DROP PIPE DISCHARGE. SEE SEC "A" STD 612

54" MINIMUM DIAMETER MANHOLE REQUIRED

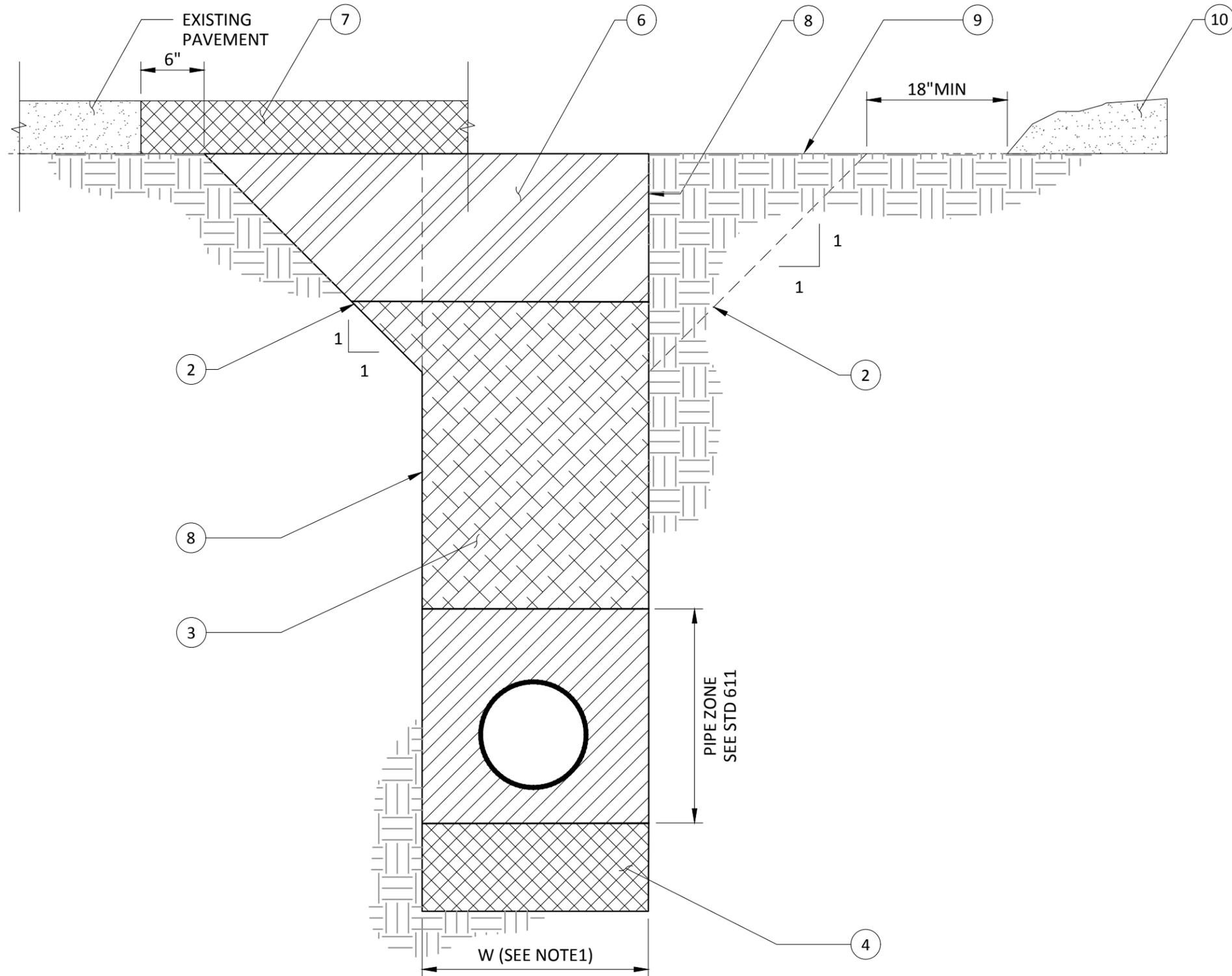
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		CITY OF EVERETT	
		EVERETT PUBLIC WORKS DEPARTMENT	
City Engineer RYAN SASS	Section Manager DAVID VOIGT	CAD Manager PAUL WILHELM	Drawn By WRB
TITLE INSIDE DROP MANHOLE CONNECTION			Current Rev Date 12/30/2016
DUCTILE IRON PIPE			STANDARD DRAWING No. 613

NOTES

1. W = MAXIMUM WIDTH OF TRENCH. FOR PIPES 15" OR LESS IN DIA W=40". FOR PIPES 18" OR GREATER W=1.5 X I.D. + 18". PIPE MUST BE CENTERED IN TRENCH.
2. ALTERNATE SLOPING TRENCH WALL TO MEET O.S.H.A. REQUIREMENTS (NO SLOPES STEEPER THAN 1:1 EXCEPT FOR ROCK).
3. SUITABLE NATIVE MATERIAL OR IMPORTED GRAVEL BORROW AS DIRECTED. COMPACT TO 90% MAXIMUM DENSITY.
4. FOUNDATION GRAVEL IF REQUIRED BY THE ENGINEER TO REPLACE UNSUITABLE MATERIAL. SHALL BE FOUNDATION MATERIAL CLASS A, B OR AS APPROVED BY THE ENGINEER.
5. FOR ADDITIONAL COMPACTION INFORMATION SEE STANDARD DWG 615.
6. IF DIRECTED BY THE ENGINEER THE TOP THREE TO FIVE FEET OF BACKFILL SHALL BE IMPORTED GRAVEL BORROW OR SUITABLE NATIVE MATERIAL COMPACTED TO 95% MAXIMUM DENSITY.
7. SEE CITY OF EVERETT STANDARD DWG 316 FOR PAVEMENT PATCH DETAILS.
8. VERTICAL TRENCH WALLS WITH SHORING TO CONFORM TO O.S.H.A. REGULATIONS.
9. SUBGRADE OR GROUND SURFACE IN NON-PAVED AREAS.
10. EXCAVATED NATIVE MATERIAL OR STOCKPILED BACKFILL MATERIAL.
11. FOR ALL TRENCHING TRANSVERSE TO THE ROADWAY BACKFILL ABOVE THE PIPE ZONE SHALL BE CONTROLLED DENSITY FILL. SEE SECTION 3-9.6 & 3-20.1 OF THESE STANDARDS.
12. FOR UTILITY CUTS SUCH AS GAS, TELEPHONE, POWER, AND CABLE TV LONGITUDINAL TO THE ROADWAY, BACKFILL SHALL BE CONTROLLED DENSITY FILL. SEE SECTION 3-9.5 OF THESE STANDARDS.



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		CITY OF EVERETT EVERETT PUBLIC WORKS DEPARTMENT	
City Engineer RYAN SASS	Section Manager DAVID VOIGT	CAD Manager PAUL WILHELM	Drawn By ESH
TITLE			Current Rev Date 12/30/2016
TYPICAL TRENCH SECTION DUCTILE IRON PIPE			STANDARD DRAWING No. 614

LIMITS OF TRENCH

W = MAXIMUM WIDTH OF TRENCH. FOR PIPES 15" OR LESS IN DIAMETER W = 40". FOR PIPES 18" OR GREATER W = 1 1/2 x I.D. + 18". PIPE MUST BE CENTERED IN TRENCH.

MATERIALS

PIPE BEDDING MATERIAL SHALL BE CRUSHED SURFACING BASE COURSE CONFORMING TO SECTION 9-03.9(3) OF THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION WSDOT/APWA.

OPTIONAL PIPE BEDDING (TO SPRING-LINE) FOR PIPE 15" DIA AND LARGER: PEA GRAVEL OR 3/4" CLEAN ROCK CHIPS AS APPROVED IN ADVANCE BY ENGINEER.

OVER EXCAVATION AND PLACEMENT OF FOUNDATION MATERIAL, IF REQUIRED SHALL BE FOUNDATION MATERIAL CLASS A OR B CONFORMING TO SECTION 9-03.17 OF THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION WSDOT/APWA.

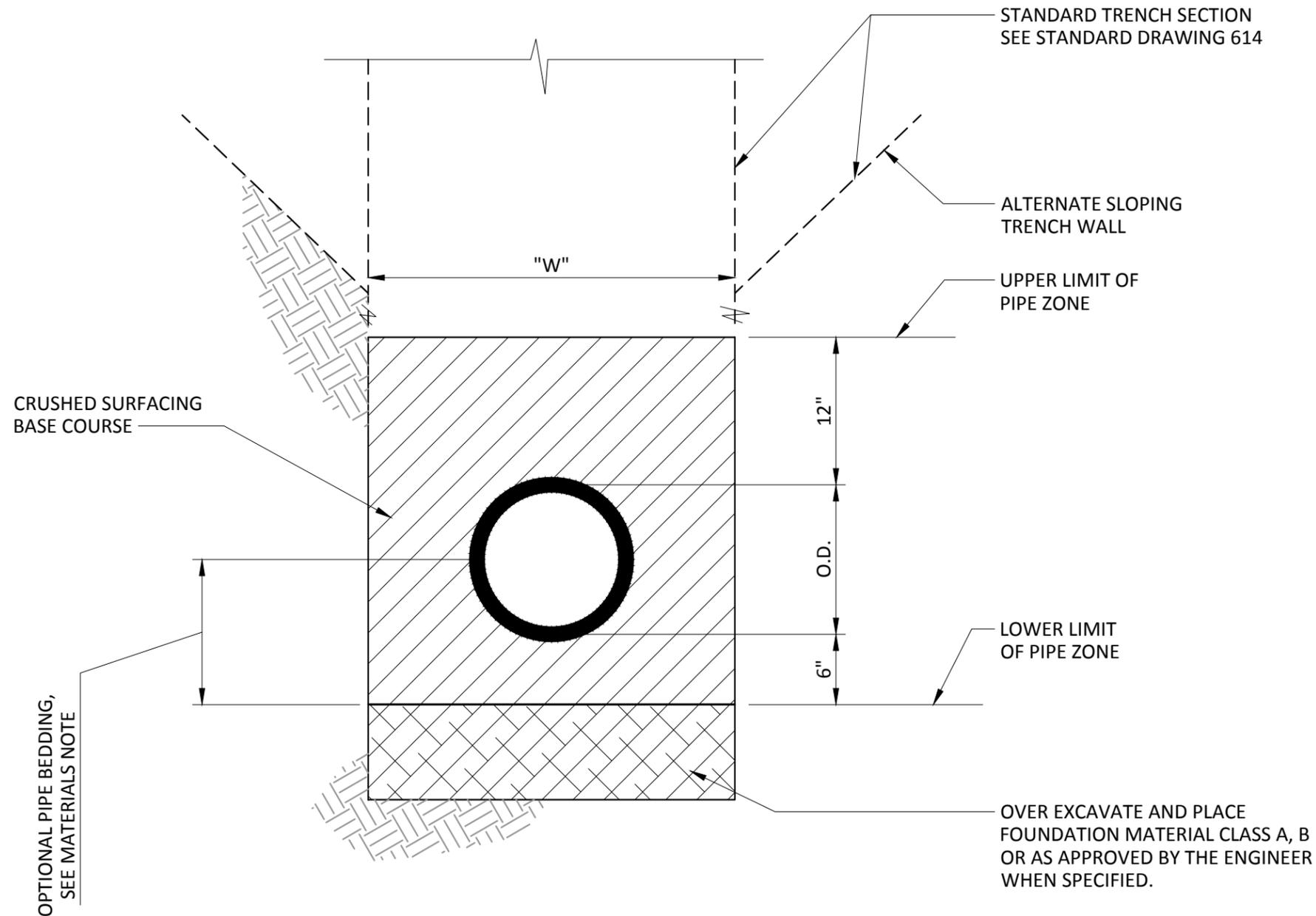
PROCEDURE FOR COMPACTION

PROVIDE UNIFORM SUPPORT UNDER PIPE BARREL.

COMPACT BEDDING MATERIAL TO 90% MAXIMUM DENSITY EXCEPT DIRECTLY OVER PIPE, HAND TAMP ONLY.

HAND TAMP UNDER PIPE HAUNCHES FOR ALL BEDDING MATERIALS.

FOR ADDITIONAL COMPACTION INFORMATION SEE STANDARD DWG 615.

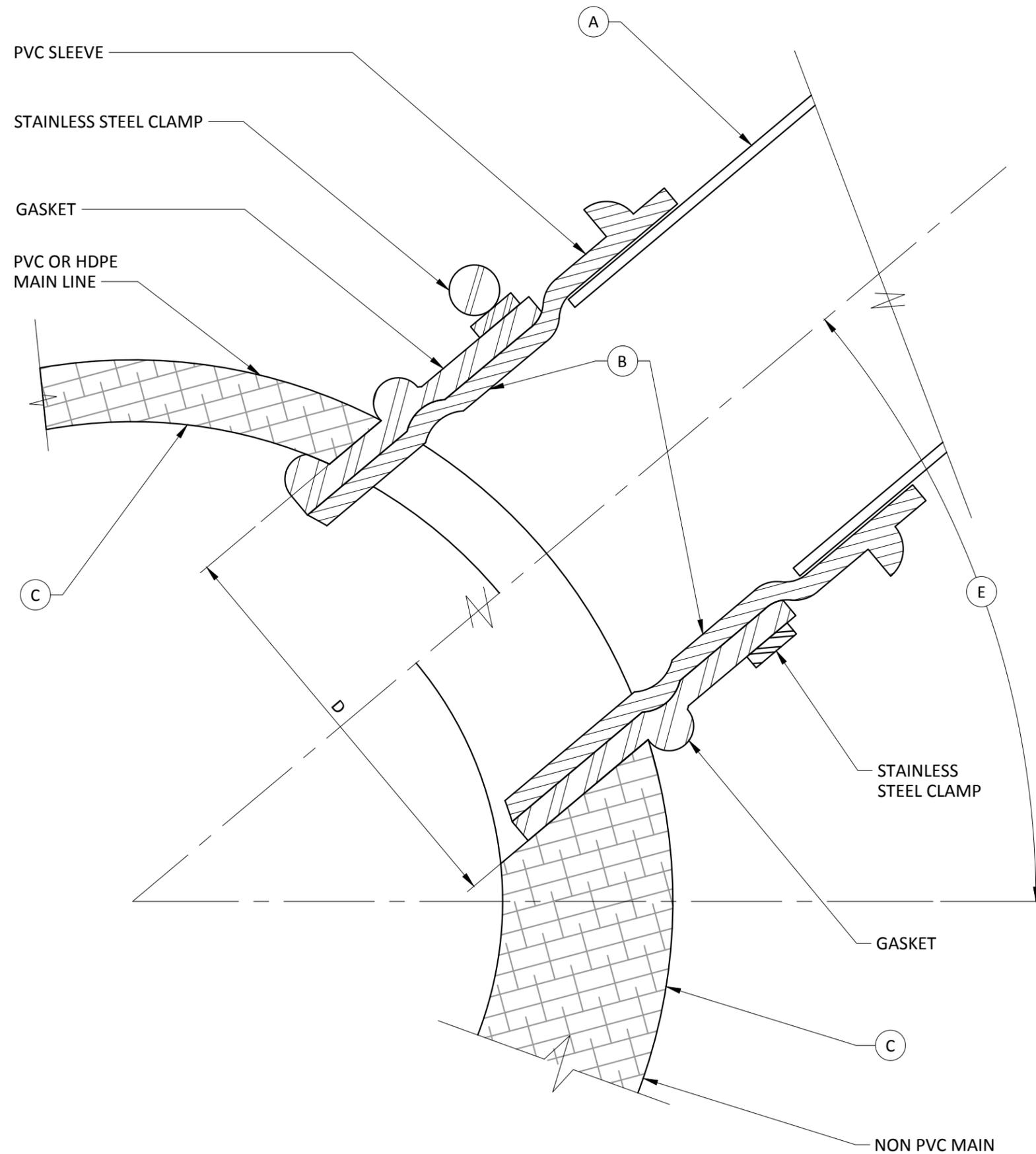


BEDDING AND FOUNDATION:

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 CITY OF EVERETT EVERETT PUBLIC WORKS DEPARTMENT		City Engineer	Section Manager	CAD Manager	Drawn By	Current Rev Date
		RYAN SASS	DAVID VOIGT	PAUL WILHELM	WRB	12/30/2016
TITLE					STANDARD DRAWING No.	
BEDDING FOR PIPE IN TRENCHES					615	

DRAFT



NOTES

- A. PVC SIDE SEWER. FOR REMAINDER OF PVC SERVICE SEE STD DWG 602.
- B. "INSERTA TEE" OR APPROVED EQUAL.
- C. EXISTING SANITARY SEWER MAIN.
- D. CORE DRILL EXISTING MAINLINE PIPE PER MFG'S SPECIFICATIONS.
- E. 35° MIN, 45° MAX

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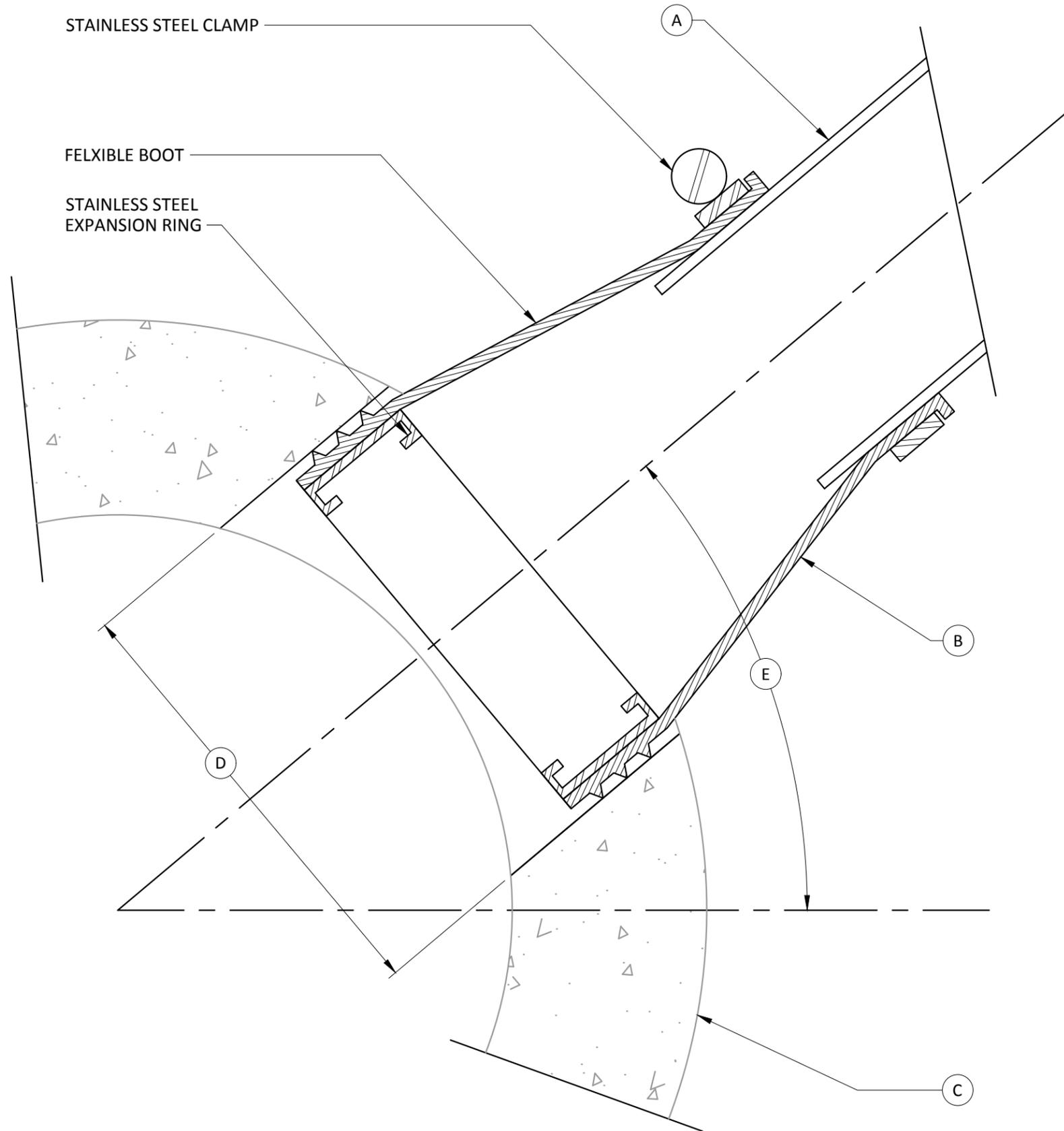
		CITY OF EVERETT EVERETT PUBLIC WORKS DEPARTMENT	
City Engineer RYAN SASS	Section Manager DAVID VOIGT	CAD Manager PAUL WILHELM	Drawn By WRB
TITLE			Current Rev Date 12/30/2016
TYPICAL SEWER CONNECTION TO EXISTING SEWER MAINS			STANDARD DRAWING No. 616

DRAFT

STAINLESS STEEL CLAMP

FELXIBLE BOOT

STAINLESS STEEL
EXPANSION RING



LEGEND:

- A. PVC SIDE SEWER. FOR REMAINDER OF PVC SERVICE SEE STD DWG 602.
- B. "KOR-N-TEE" OR APPROVED EQUAL.
- C. EXISTING OR NEW CONCRETE SANITARY SEWER MAIN.
- D. CORE DRILL EXISTING MAINLINE PIPE PER MFG'S SPECIFICATIONS.
- E. 35° MIN, 45° MAX

NOTES:

- 1. USE OF THIS SEWER CONNECTION ALTERNATE MUST HAVE APPROVAL OF THE CITY ENGINEER ON A CASE BY CASE BASIS.

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City Engineer RYAN SASS	Section Manager DAVID VOIGT	CAD Manager PAUL WILHELM	Drawn By WRB	Current Rev Date 12/30/2016
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TITLE ALTERNATE SEWER CONNECTION TO EXISTING/NEW CONCRETE SEWER MAIN	STANDARD DRAWING No. 617
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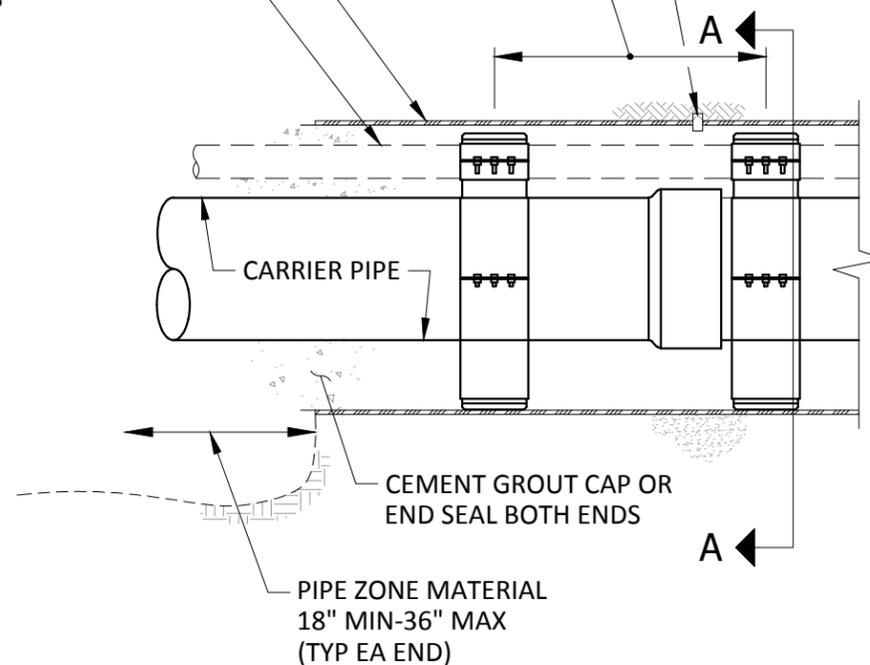
DRAFT

STEEL CASING,
WALL THICKNESS & SIZE
PER PLANS

SECONDARY
CARRIER
PIPE PER
PLANS

6'-0" OC FOR CARRIER PIPE OR AS RECOMMENDED
BY MFR-MIN. 3 INSULATORS PER PIPE LENGTH.
INSTALL ON THE SPIGOT END ALIGNED W/THE
REFERENCE MARK

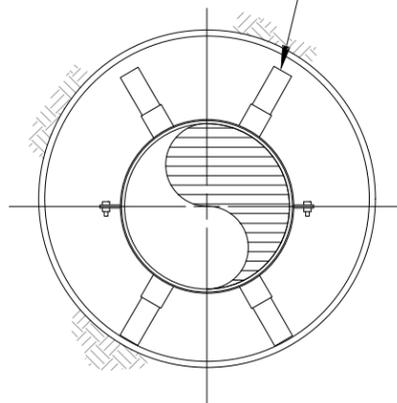
1 1/2" GROUT PORTS
EVERY 10'



NOTES

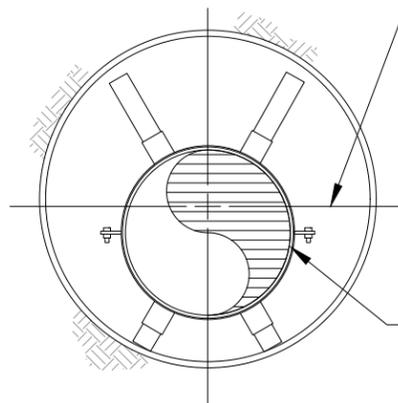
1. NEW ANSI/AWWA C200 STEEL CASING AS REQUIRED (SEE PLANS AND SPECIFICATIONS).
2. PROVIDE 1" MINIMUM CLEARANCE BETWEEN CASING AND CARRIER PIPE BELLS AND APPURTENANCES.
3. CONTRACTOR TO VERIFY CASING SIZES PRIOR TO ORDERING AND SIZING CASING INSULATORS.
4. ALL JOINTS OF CARRIER PIPE TO BE RESTRAINED.
5. CASING SHALL BE FILLED WITH FINE CLEAN DRY SAND CAREFULLY AIR BLOWN IN SUCH A WAY TO ELIMINATE ANY VOIDS.
6. BACKFILL BORE PIT ABOVE PIPE ZONE WITH SPECIFIED CLASS BACKFILL MATERIAL.
7. CASING, APPURTENANCES AND ALL OTHER MISCELLANEOUS ITEMS TO BE FURNISHED BY CONTRACTOR.

PROVIDE 1" MIN CLEAR BETWEEN
CARRIER AND CASING. (TYP)



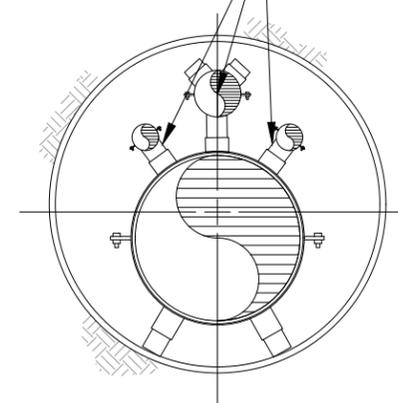
CASING INSULATOR
W/CENTERED AND
RESTRAINED
CONFIGURATION.

CASING CENTER LINE
(TYP)



CASING INSULATOR
RESTRAINED AND CARRIER
AT BOTTOM OF CASING
CONFIGURATION.

SECONDARY
CARRIERS



CASING INSULATOR
RESTRAINED WITH
MULTIPLE SECONDARY
CARRIERS.

EXAMPLE OF PRE-FABRICATED SKIDS AND INSULATOR CONFIGURATIONS

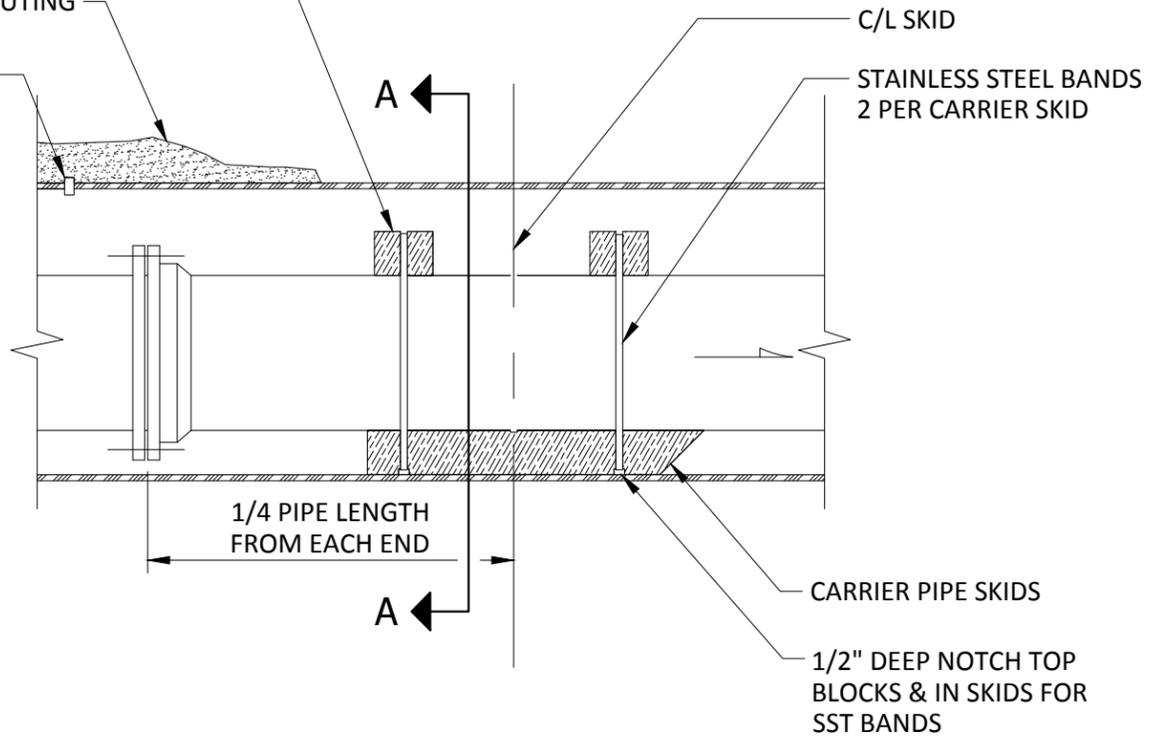
SECTION A-A

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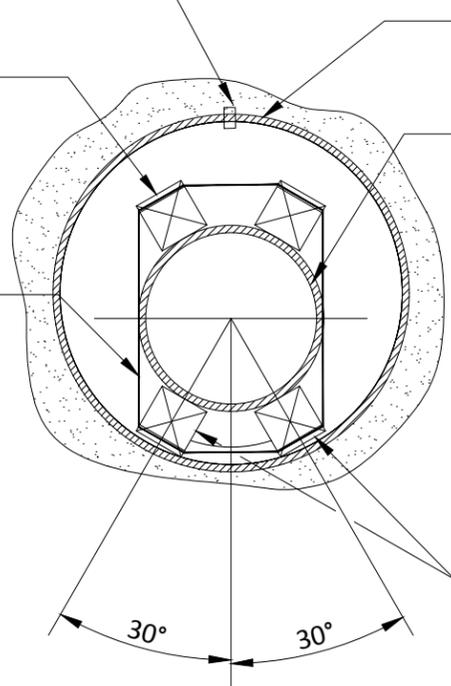
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		<p>CITY OF EVERETT EVERETT PUBLIC WORKS DEPARTMENT</p>	
City Engineer RYAN SASS	Section Manager DAVID VOIGT	CAD Manager PAUL WILHELM	Drawn By WRB
<p>TITLE CASING DETAIL PRE-FABRICATED SKIDS</p>			<p>Current Rev Date 12/30/2016 STANDARD DRAWING No. 618</p>

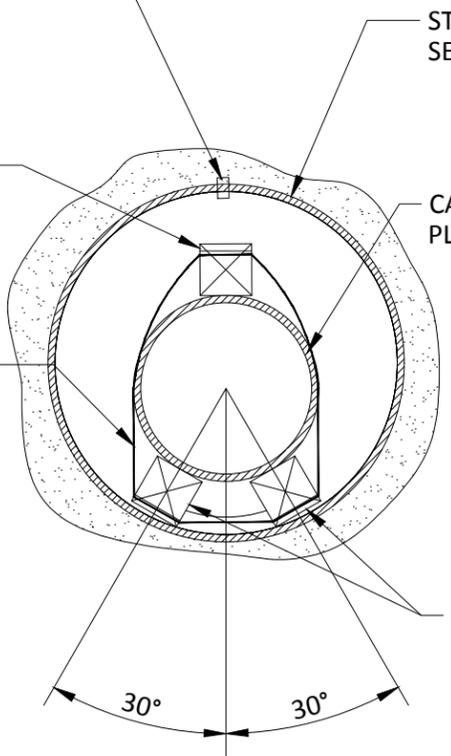
TWO OR FOUR 4"x4"x8" WOOD SUPPORT BLOCK PER SKID.
VOIDS CREATED BY BORING SHALL BE FILLED BY PRESSURE GROUTING
1 1/2" GROUT PORTS EVERY 10'



1 1/2" GROUT PORTS EVERY 10'
FOUR 4"x4"x8" WOOD SUPPORT BLOCKS PER SKID
NO SECONDARY CARRIER PIPE



1 1/2" GROUT PORTS EVERY 10'
TWO 4"x4"x8" WOOD SUPPORT BLOCK PER SKID NO SECONDARY CARRIER PIPE



EXAMPLES OF FIELD ASSEMBLED CASING SKIDS

SECTION A-A

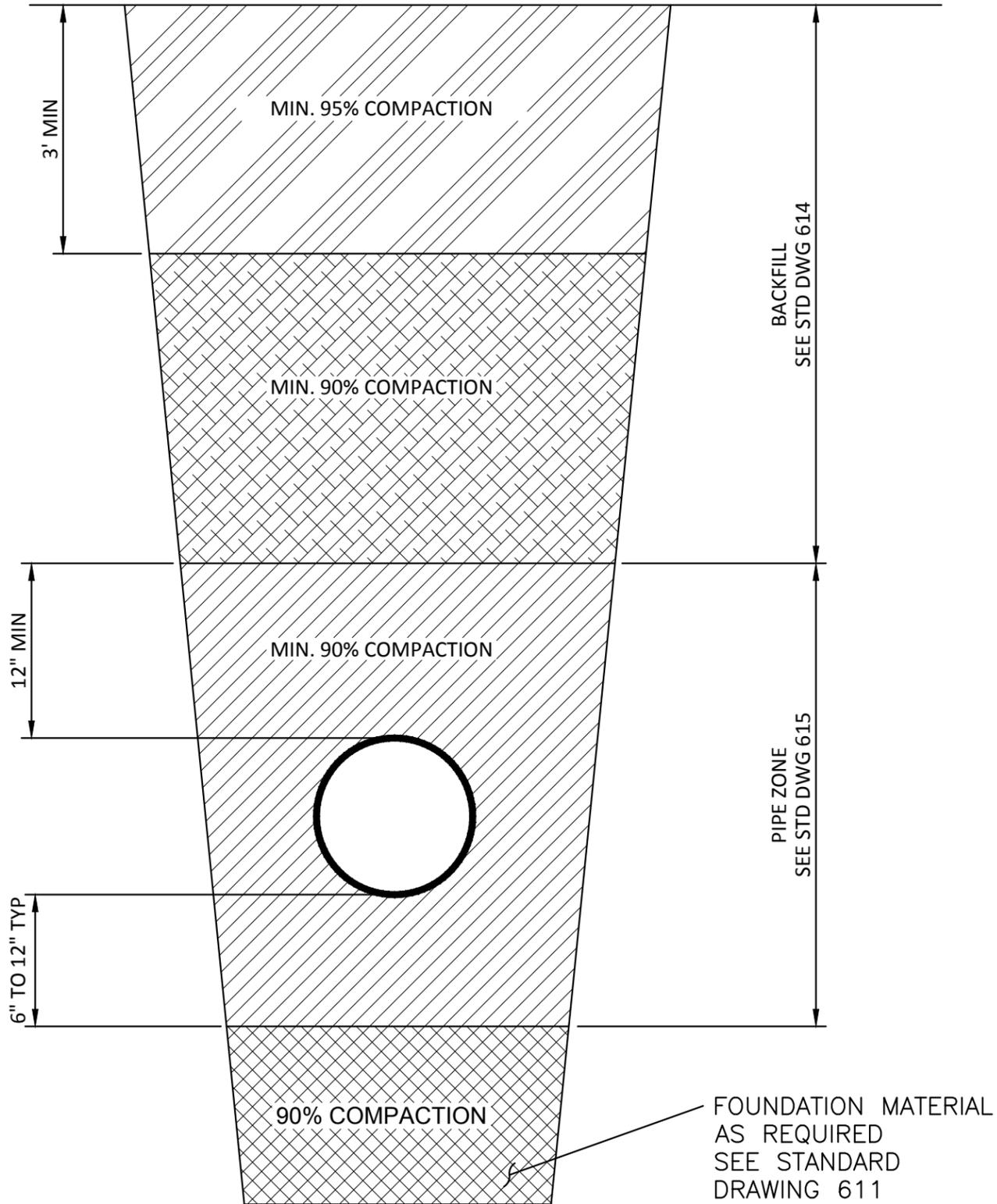
NOTES

1. ALL JOINTS OF CARRIER PIPE WITHIN CASING SHALL BE FLANGED (FL) OR MECHANICAL JOINT (MJ) FITTINGS WITH MEG-A-LUG RESTRAINTS.
2. CARRIER PIPE WILL BE PRESSURE TESTED BY CONTRACTOR AND TV INSPECTION BY CITY CREWS.
3. CARRIER SKIDS SHALL BE SECURELY ATTACHED TO CARRIER PIPE W/STAINLESS STEEL (SST) BANDS (MIN 2 BANDS PER SKID SET).
4. CARRIER SKIDS SHALL BE ROUNDED OR BEVELED ON LEADING EDGE, AND SHALL BE NOTCHED TO RECEIVE SST BANDS.
5. CARRIER SKIDS SHALL BE PRESSURE TREATED WOOD 4"x4"x48" (2 SETS OF 2 SKIDS PER LENGTH OF PIPE). CONTRACTOR MAY USE APPROVED PREFABRICATED SKIDS PROVIDED A 1" MIN CLEARANCE IS MAINTAINED BETWEEN JOINT FLANGE AND CASING.
6. SECONDARY CARRIER PIPES SHALL BE SECURED TO THE TOP OF THE MAIN CARRIER PIPE AS SHOWN.
7. SECONDARY CARRIER PIPE WILL BE TESTED BEFORE CASING ANNULAR SPACE IS FILLED.
8. END SEALS SHALL BE PROVIDED FOR THE JACKED CASING PIPES. THE END SEALS SHALL BE APS STANDARD MODEL AM AS MANUFACTURED BY ADVANCED PRODUCTS (WWW.APSONLINE.COM) OR APPROVED EQUIVALENT.
9. CASING, APPURTENANCES AND ALL OTHER MISCELLANEOUS ITEMS TO BE FURNISHED BY CONTRACTOR.

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 CITY OF EVERETT EVERETT PUBLIC WORKS DEPARTMENT		City Engineer	Section Manager	CAD Manager	Drawn By	Current Rev Date
		RYAN SASS	DAVID VOIGT	PAUL WILHELM	WRB	12/30/2016
CASING DETAIL FIELD ASSEMBLED SKIDS						STANDARD DRAWING No. 619



NOTES

1. ALL BACKFILL MATERIAL SHALL BE PLACED IN LIFTS NOT TO EXCEED 12 INCHES BEFORE COMPACTION UNLESS AUTHORIZED BY THE ENGINEER DUE TO THE CHARACTER OF THE MATERIAL AND THE COMPACTING EQUIPMENT.
2. MECHANICAL COMPACTION OF BACK FILL MATERIAL SHALL NOT BEGIN UNTIL THE DEPTH OF COMPACTED BACKFILL MATERIAL IS 2 FEET ABOVE THE TOP OF PIPE.
3. EACH LIFT SHALL BE MECHANICALLY COMPACTED TO THE REQUIRED DENSITY PRIOR TO PLACING SUBSEQUENT LIFTS OF BACKFILL MATERIAL.
4. COMPACTION TESTS SHALL BE AS REQUIRED BY THE CITY ENGINEER, BUT IN NO CASE LESS THAN 2 TESTS EVERY 200 FEET OF TRENCH (ONE AT SUBGRADE AND ONE AT 50% OF TRENCH DEPTH).
5. IN PLACE DENSITY AND MOISTURE CONTENT WILL BE DETERMINED USING NUCLEAR METHOD, ASTM 2922-71.
6. LABORATORY MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT WILL BE DETERMINED USING THE MODIFIED PROCTOR METHOD IN ACCORDANCE WITH ASTM D-1557.

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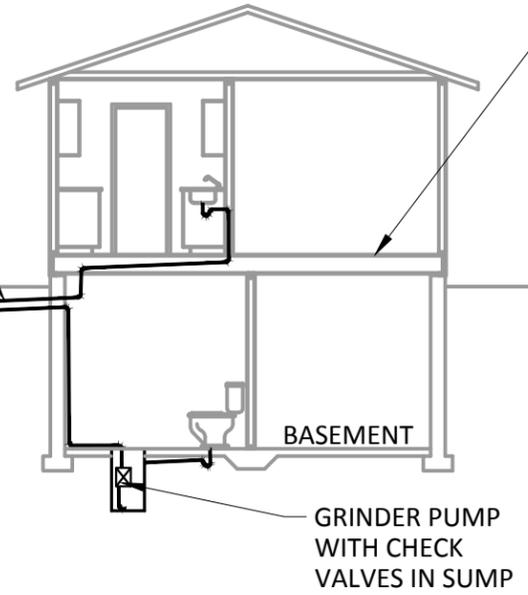
		CITY OF EVERETT EVERETT PUBLIC WORKS DEPARTMENT		
City Engineer RYAN SASS	Section Manager DAVID VOIGT	CAD Manager PAUL WILHELM	Drawn By WRB	Current Rev Date 12/30/2016
TITLE TYPICAL TRENCH COMPACTION				STANDARD DRAWING No. 620

UPPER FLOOR PLUMBING SHOULD BE CONNECTED TO PRIVATE MH ACCESS STRUCTURE

PRIVATE MANHOLE ACCESS STRUCTURE CLEAN OUT PER STANDARD DRAWING 604

SEWER MAIN IN STREET OR ALLEY

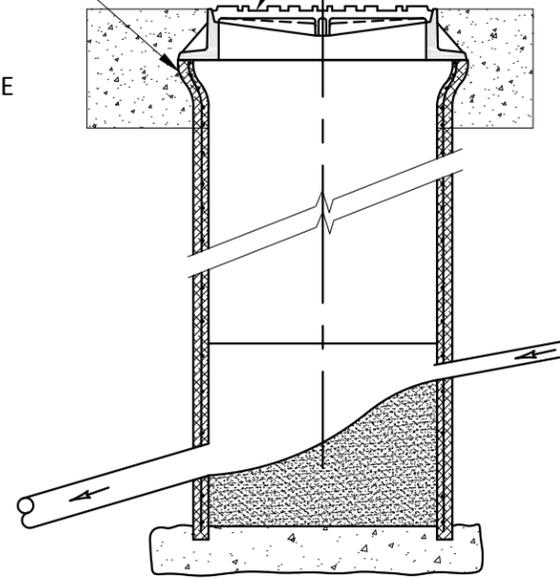
PROPERTY LINE



CONCRETE COLLAR TYP

FINISH FLOOR ELEVATION ABOVE UPSTREAM MANHOLE COVER IN STREET

FRAME AND COVER PER STANDARD DRAWING 610 OR 611



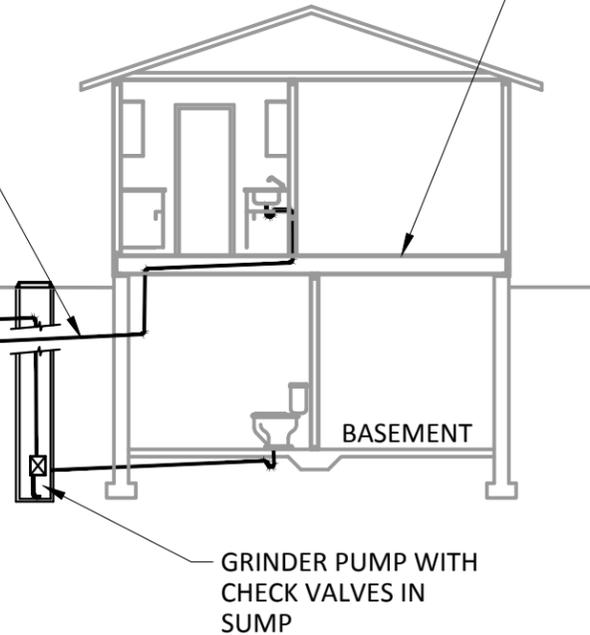
GRINDER PUMP INSIDE HOUSE

UPPER FLOOR PLUMBING SHOULD BYPASS THE PUMP SUMP AND BE CONNECTED DIRECTLY TO THE PRIVATE MH ACCESS STRUCTURE

PRIVATE MH ACCESS STRUCTURE CLEAN OUT PER STANDARD DRAWING 604

SEWER MAIN IN STREET OR ALLEY

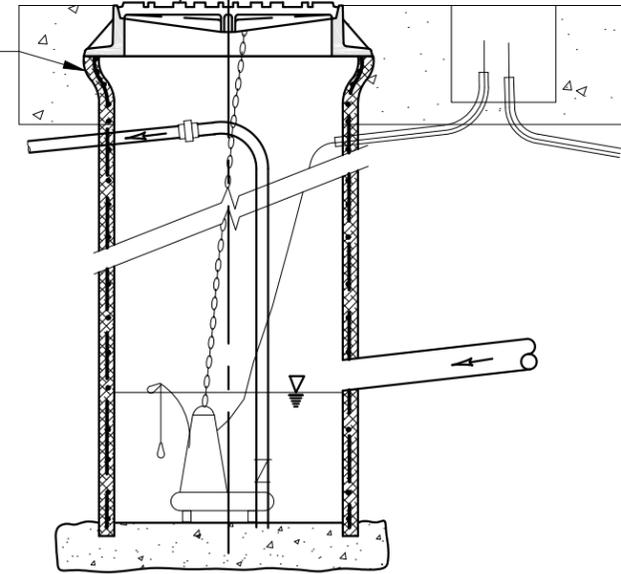
PROPERTY LINE



FINISH FLOOR ELEVATION ABOVE UPSTREAM MANHOLE COVER IN STREET

CONCRETE COLLAR TYP

FRAME AND COVER PER STANDARD DRAWING 610 OR 611



GRINDER PUMP OUTSIDE HOUSE

GRINDER PUMP IN SUMP

PRIVATE MH ACCESS STRUCTURES

NOTES:

1. PUMP SHALL BE INSTALLED PER MANUFACTURERS SPECIFICATIONS.
2. ANY PLUMBING WITHIN THE BUILDING MUST COMPLY WITH THE CURRENT UNIFORM PLUMBING CODE AS AMENDED BY THE STATE OF WASH..
3. THE SIDE-SEWER OUTSIDE THE BUILDING MUST COMPLY WITH THE CITY'S DESIGN AND CONSTRUCTION STANDARDS.
4. OTHER METHODS FOR BACK-WATER PREVENTION MUST BE APPROVED BY THE CITY.
5. PRIVATE MH ACCESS STRUCTURE MUST BE WATERTIGHT, CORROSION RESISTANT & SUITABLE FOR UNDERGROUND BURIAL. COVER MUST BE GAS-TIGHT, LOAD-SUPPORTING AND REMOVABLE. RECOMMENDED STRUCTURE IS 30" DIA REINFORCED CONCRETE WITH BELL UP. PROVIDE MANHOLE (MH) FRAME AND COVER (STD 607A OR 607B).
6. COMMERCIAL MFD FRP PUMP WITH SUMP IS ALSO SUITABLE.

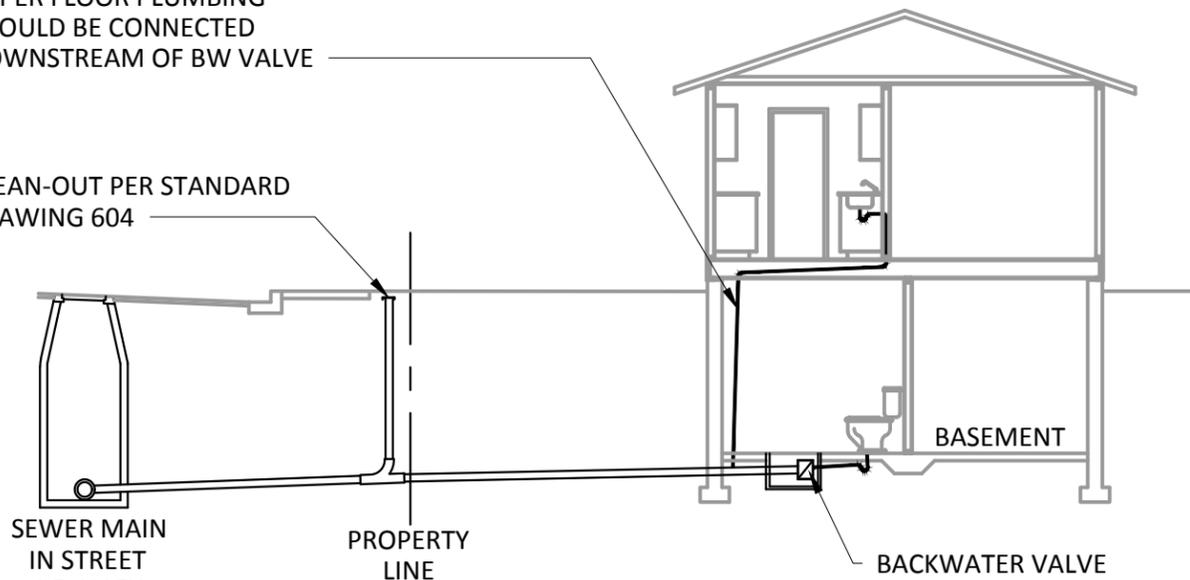
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		<p>CITY OF EVERETT EVERETT PUBLIC WORKS DEPARTMENT</p>	
City Engineer RYAN SASS	Section Manager DAVID VOIGT	CAD Manager PAUL WILHELM	Drawn By WRB
<p>TITLE GRINDER PUMP CONNECTION TO SANITARY SEWER PUMP INSIDE OR OUTSIDE HOUSE</p>			<p>Current Rev Date 12/30/2016 STANDARD DRAWING No. 621</p>

NEW CONSTRUCTION & RETROFIT:
UPPER FLOOR PLUMBING SHOULD BE CONNECTED DOWNSTREAM OF BW VALVE

CLEAN-OUT PER STANDARD DRAWING 604

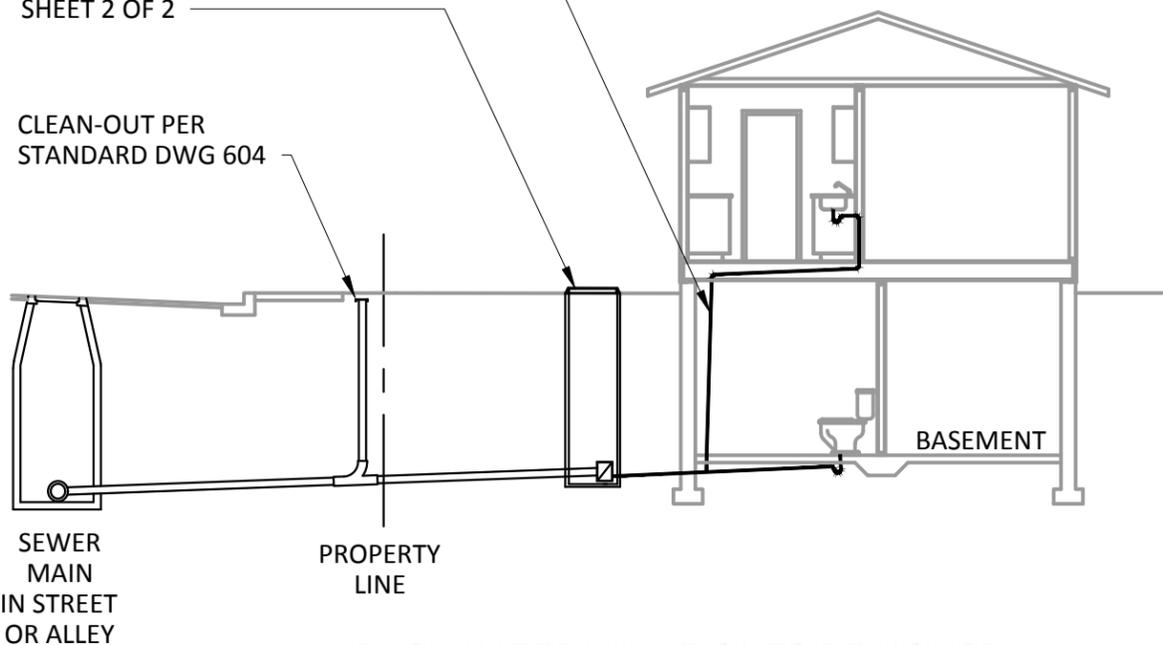


BACKWATER VALVE INSIDE HOUSE/BASEMENT

RETROFIT ONLY:
UPPER FLOOR PLUMBING CONNECTED UPSTREAM OF BW VALVE

BACKWATER (BW) VALVE: INSTALLATIONS SEE DETAILS SHEET 2 OF 2

CLEAN-OUT PER STANDARD DWG 604



BACKWATER VALVE OUTSIDE HOUSE

FINISHED GRADE
CAST IRON RING & COVER PER STANDARD DRAWING 604

REMOVABLE "CLEAN CHECK" FLAPPER ASSEMBLY

4"/6" GRAVITY SEWER OUT

6" DIA. RISER PIPE AND CAP

4"/6" GRAVITY SEWER IN



BACKWATER VALVE

ALTERNATE "CLEAN-CHECK" INSTALLATION

CITY RECOMMENDS "CLEAN CHECK" BY RECTORSEAL WITH REMOVABLE INSERT/FLAPPER ASSEMBLY

FINISHED GRADE

RING AND COVER PER STD DWG 610 OR 611

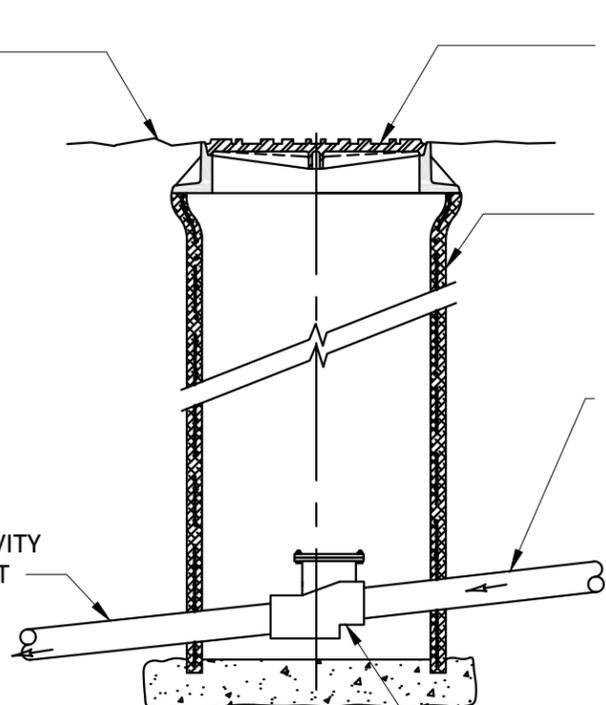
30" DIA RCP

4"/6" GRAVITY SEWER IN

4"/6" GRAVITY SEWER OUT

4" TO 6" CAST IN PLACE CONCRETE BASE

BACKWATER VALVE



PRIVATE MANHOLE ACCESS INSTALLATION

NOTES

1. ANY PLUMBING WITHIN THE BUILDING MUST COMPLY WITH THE CURRENT UNIFORM PLUMBING CODE AS AMENDED BY THE STATE OF WASH..
2. THE SIDE-SEWER OUTSIDE THE BUILDING MUST COMPLY WITH THE CITY'S DESIGN AND CONSTRUCTION STANDARDS.
3. OTHER METHODS FOR BACK-WATER PREVENTION MUST BE APPROVED BY THE CITY.
4. PRIVATE MH ACCESS STRUCTURE MUST BE WATERTIGHT, CORROSION RESISTANT & SUITABLE FOR UNDERGROUND BURIAL. COVER MUST BE GAS-TIGHT LOAD-SUPPORTING AND REMOVABLE. RECOMMENDED STRUCTURE IS 30" DIA REINFORCED CONCRETE PIPE (RCP) PLACED VERTICAL ON CAST IN PLACE (CIP) CONCRETE BASE WITH BELL UP. PROVIDE MANHOLE (MH) FRAME AND COVER (STD 607A OR 607B).

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 CITY OF EVERETT EVERETT PUBLIC WORKS DEPARTMENT		City Engineer	Section Manager	CAD Manager	Drawn By	Current Rev Date
		RYAN SASS	DAVID VOIGT	PAUL WILHELM	WRB	12/30/2016
BACKWATER VALVE CONNECTION TO SANITARY SEWER INSIDE & OUTSIDE INSTALLATIONS						STANDARD DRAWING No. 622

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