FLOW

GROUT ADJUSTING RINGS INSIDE, OUTSIDE AND BETWEEN. GROUT UNDER CASTING.

FIRST STEP
14" MIN MAX
16" MIN
18" MIN
20" MAX
22" MAX
24" MIN

INSTALL HAND HOLD
(IF REQUIRED)

ECCENTRIC CONE

COPOLYMER POLYPROPYLENE
PLASTIC STEPS & LADDER.
PER STANDARD SEWER DETAIL #6. LOCATE AS SHOWN ON PLAN VIEW BELOW.

F.R.P. AND/OR P.P. MH
BASE LINER

FLOW

1" SECTION BELOW CONE IS REQUIRED.

CONFINE O-RING RUBBER
GASKET JOINTS AND BUTYL
SEALANT STRIPS (TYP.)

FLOW

PEA GRAVEL BEDDING PER
THE SPECIFICATIONS.

FOUNDATION GRAVEL PER
THE SPECIFICATIONS, IF REQUIRED.

SECTION A–A

NOTES:

1. IF P.P. BASE LINER IS UTILIZED, A MINIMUM SLOPE OF 0.06' IS ACCEPTABLE ACROSS THE INVERT CHANNEL. THE F.R.P. BASE LINER SHALL REQUIRE THE DISTRICT STANDARD MINIMUM SLOPE OF 0.1' ACROSS THE INVERT CHANNEL.

2. MARKER POSTS MAY BE REQUIRED IN EASEMENTS.

3. THE MANHOLE BASELINER SHALL BE A FIBERGLASS REINFORCED PLASTIC (F.R.P.) AND/OR POLYPROPYLENE (P.P.) BASELINER SYSTEM PER THE ENGINEERING SPECIFICATIONS.

4. FOR MANHOLES LESS THAN 5" IN DEPTH, SEE SEWER STANDARD DETAIL #3, SHALLOW MANHOLE.

5. ALL PICK HOLES SHALL BE GROUTED ON THE INSIDE AND OUTSIDE OF MANHOLE.

6. MANHOLE UD SHALL BE POSITIONED SO THAT AT FULL-OPEN, THE UD IS PARALLEL TO EDGE LINE.

PRECAST MANHOLE W/ BASE LINER

NOT TO SCALE

NORTHSHORE UTILITY DISTRICT

2019 STANDARD SEWER DETAILS

LAST UPDATED
FEBRUARY 2019
SADDLE MANHOLE

NOT TO SCALE

NOTES:
1. MARKER POSTS MAY BE REQUIRED IN EASEMENTS.
2. ALL PICK HOLES SHALL BE GROUTED ON THE INSIDE AND OUTSIDE OF MANHOLE.
3. MANHOLE LID SHALL BE POSITIONED SO THAT AT FULL-OPEN, THE LID IS PARALLEL TO EDGE LINE.

NORTHSHORE UTILITY DISTRICT
2019 STANDARD SEWER DETAILS
IN UNPAVED AREAS, OR AS SHOWN ON THE PLANS, PROVIDE AN ASPHALT OR CONCRETE RING AROUND THE MANHOLE FRAME. 12" WIDE AND 6" THICK.

MINIMUM ADJUSTMENT SHALL BE (1) – 4" RING.

GROUT ADJUSTING RINGS INSIDE, OUTSIDE AND BETWEEN. GROUT UNDER CASTING.

18" ECCENTRIC CONE

CONFINED O-RING RUBBER GASKET JOINTS AND BUTYL SEALANT STRIPS (TYP.)

48" 12" 18"

F.R.P. AND/OR P.P. M ä H BASE LINER

FLOW

PEA GRAVEL BEDDING PER THE SPECIFICATIONS.

SECTION A-A

FOUNDATION GRAVEL PER THE SPECIFICATIONS, IF REQUIRED.

NOTES:

1. USE 18" ECCENTRIC CONE AND 2' BASE FOR SHALLOW MANHOLE APPLICATION.

2. IF P.P. BASE LINER IS UTILIZED, A MINIMUM SLOPE OF 0.06" IS ACCEPTABLE ACROSS THE INVERT CHANNEL. THE F.R.P. BASE LINER SHALL REQUIRE THE DISTRICT STANDARD MINIMUM SLOPE OF 0.1' ACROSS THE INVERT CHANNEL.

3. MARKER POSTS MAY BE REQUIRED IN EASEMENTS.

4. THE MANHOLE BASELINER SHALL BE A FIBERGLASS REINFORCED PLASTIC (F.R.P.) AND/OR POLYPROPYLENE (P.P.) BASELINER SYSTEM PER THE ENGINEERING SPECIFICATIONS.

5. ALL PICK HOLES SHALL BE GROUTED ON THE INSIDE AND OUTSIDE OF MANHOLE.

6. MANHOLE LID SHALL BE POSITIONED SO THAT AT FULL-OPEN, THE LID IS PARALLEL TO EDGE LINE.

PRECAST SHALLOW MANHOLE W/ BASE LINER

NOT TO SCALE

NORTHSORE UTILITY DISTRICT
2019 STANDARD SEWER DETAILS

DETAIL APPROVALS
EDITOR TMC
MANAGER DPK

LAST UPDATED FEBRUARY 2019
INSIDE DROP MANHOLE W/ BASE LINER

NOTES:

1. FIBERGLASS CHANNEL RECEIVING THE INSIDE DROP FLOW SHALL BE SIZED ONE PIPE SIZE LARGER THAN THE INCOMING PIPE TO ACCOMMODATE THE 90° BEND. BEND TO REST FLUSH IN THE CHANNEL.

2. EXISTING MANHOLES WITHOUT THE FRP BASELINER AND NO CONCRETE CHANNEL TO ACCOMMODATE THE 90° BEND, SHALL HAVE THE BEND SET ON TOP OF THE EXISTING CONCRETE BENCH AND GROUTED IN-PLACE. ADDITIONAL PVC PIPE MAY BE REQUIRED TO DIRECT FLOW TO FLOWLINE.

3. IF P.P. BASE LINER IS UTILIZED, A MINIMUM SLOPE OF 0.06' IS ACCEPTABLE ACROSS THE INVERT CHANNEL. THE F.R.P. BASE LINER SHALL REQUIRE THE DISTRICT STANDARD MINIMUM SLOPE OF 0.1' ACROSS THE INVERT CHANNEL.

4. MARKER POSTS MAY BE REQUIRED IN EASEMENTS.

5. THE MANHOLE BASELINER SHALL BE A FIBERGLASS REINFORCED PLASTIC (F.R.P.) AND/OR POLYPROPYLENE (P.P.) BASELINER SYSTEM PER THE ENGINEERING SPECIFICATIONS.

6. ALL PICK HOLES SHALL BE GROUTED ON THE INSIDE AND OUTSIDE OF MANHOLE.

7. MANHOLE LID SHALL BE POSITIONED SO THAT AT FULL-OPEN, THE LID IS PARALLEL TO EDGE LINE.
NOTE:
1. MANHOLE FRAME AND COVER SHALL BE EAST JORDAN IRON WORKS ERGO ASSEMBLY, PART NUMBER 001040105L01.

MANHOLE LOCKING FRAME AND COVER

NOT TO SCALE

NORTHSHORE UTILITY DISTRICT
2019 STANDARD SEWER DETAILS
MANHOLE STEPS AND LADDER

NOTES:
1. STEPS TO BE LANE INTERNATIONAL #P-14850 OR DISTRICT APPROVED EQUAL.
2. FASTEN LADDER TO MH STRUCTURE WITH STAINLESS STEEL LAG SCREWS INTO LEAD ANCHORS, OR SET LADDER BASE INTO MH SHELF PRIOR TO CURING.
NEW SIDE SEWER STUB
CONNECTION TO EXISTING OR NEW MAIN

NOT TO SCALE

1. 2"x4" SERVICE MARKER, LENGTH AS REQUIRED. PAINT PORTION OF SERVICE MARKER THAT IS ABOVE GRADE WITH WHITE PAINT. STENCIL "S/S" WITH 3" TALL BLACK LETTERS.

2. FOR NEW SEWER MAINS, INSTALL A 6" GASKETED TEE WITH THE MAIN LINE CONSTRUCTION. FOR EXISTING SEWER MAINS, CORE DRILL AND SADDLE (ROMAC "CB" SEWER SADDLE OR EQUAL).

3. INSTALL 6" PVC, TWO-WAY CLEANOUT TEST TEE AND RISER PIPE AT THE PROPERTY LINE. BRING TO GRADE AFTER FINAL SIDE SEWER INSPECTION AND BACKFILL. INSTALL SIDE SEWER CLEANOUT BOX AND COVER PER STANDARD DETAIL #9.

4. PROVIDE DETECTOR TAPE 12" OVER BEDDING FOR ENTIRE LENGTH OF STUB AND UP 2"x4" SERVICE MARKER.

5. FOR DEVELOPER EXTENSION PROJECTS, EXTEND STUB 10' INTO PROPERTY; OTHERWISE, TERMINATE STUB AT PROPERTY LINE OR EDGE OF EASEMENT.

6. 6" SIDE SEWER STUB AT 2% MINIMUM SLOPE, 100% (45') MAXIMUM SLOPE.

7. APPROVED WATERTIGHT CAP.
SIDE SEWER
CONNECTION TO EXISTING STUB

NOTES:

1. ALL NEW SIDE SEWER PIPE SHALL BE GASKETED PVC PIPE, SDR 35, ASTM 3034.

2. THERE SHALL BE A MINIMUM 2’ OF SEPARATION BETWEEN BENDS.

3. EXISTING SIDE SEWER STUBS ON DEVELOPER EXTENSION PROJECTS MAY HAVE BEEN INSTALLED 5’–10’ ONTO THE PROPERTY, AND MAY HAVE INCLUDED THE 2–WAY CLEANOUT, RISER PIPE & BOX. CONTRACTORS ARE TO CONFIRM REQUIREMENTS PRIOR TO CONSTRUCTION.

4. INSTALL 6” PVC, TWO–WAY CLEANOUT TEST TEE, AS INDICATED ABOVE. BRING TO GRADE AFTER FINAL SIDE SEWER INSPECTION AND BACKFILL. INSTALL SIDE SEWER CLEANOUT BOX AND COVER PER STANDARD DETAIL #9.
NOTES:

1. CLEANOUTS IN HARDSCAPE (SUCH AS SIDEWALKS, DRIVeways, AND PATIOS) SHALL BE BROUGHT TO GRADE and INSTALLED IN A CLEANOUT BOX AND PLUGGED WATERTIGHT WITH A MECHANICAL PLUG, PER STANDARD DETAIL #9. OTHERWISE, CLEANOUTS SHALL BE BROUGHT TO WITHIN 24" OF GRADE AND PLUGGED WATERTIGHT WITH A GASKETED CAP OR PUSH PLUG.

2. ALL PIPE MATERIAL SHALL BE BELL & SPIGOT TYPE WITH RUBBER GASKET JOINT AND SHALL BE IN CONFORMANCE WITH ASTM D3034 (SDR-35).
NOTES:

1. SIDE SEwers THAT WILL NOT BE REUSED SHALL BE ABANDONED PERMANENTLY AT THE MAIN and CAPPED WITH AN APPROVED WATERTIGHT, GASKETED CAP.

2. SIDE SEwers THAT WILL BE REUSED SHALL BE ABANDONED TEMPORARILY WITH AN APPROVED WATERTIGHT, GASKETED CAP AT THE END OF THE 6” STUB AT THE PROPERTY LINE. INSTALL A 2”x4” MARKER AT THE END OF THE STUB.

3. PAINT PORTION OF SERVICE MARKER THAT IS ABOVE GRADE WITH WHITE PAINT. STENCIL “S/S” WITH 3” TALL BLACK LETTERS.
NOTES:


2. CLEANOUT BOX AND COVER SHALL BE ARMORCAST POLYMER CONCRETE BOX ASSEMBLY, PART #A6001423TA, H20 RATED WITH PENTAHEAD LOCKING BOLTS AND "CO" STAMPED ON COVER. ALL CLEANOUTS BROUGHT TO GRADE SHALL HAVE THIS BOX AND COVER INSTALLED.

3. ALL PIPE MATERIAL SHALL BE BELL & SPIGOT TYPE WITH RUBBER GASKET JOINT AND SHALL BE IN CONFORMANCE WITH ASTM D3034 (SDR-35).

PROFILE

SIDE SEWER SURFACE CLEANOUT

NOT TO SCALE
NOTES:

1. CASING LENGTH, TYPE, LOCATION AND SIZE SHALL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE DISTRICT AND SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.

2. CASING SPACERS SHALL INCLUDE POLYETHYLENE RUNNERS WITH STAINLESS STEEL BANDS PER THE SPECIFICATIONS.

3. CASING SPACERS SHALL BE INSTALLED AT A MAXIMUM 10' SPACING, WITH A SPACER LOCATED BEHIND EACH PIPE BELL AND WITH SPACERS LOCATED WITHIN 2' OF CASING ENDS.

4. CARRIER PIPE SHALL BE CL 52 DUCTILE IRON RESTRAINED JOINT PIPE UNLESS OTHERWISE SPECIFIED.
NOTES:

1. TRENCH WIDTH:
   - MINIMUM: PIPE O.D. + 12" (6" EACH SIDE OF PIPE).
   - MAXIMUM: 40" FOR 15" PIPE AND SMALLER
     (1 1/2" X I.D.) + 18" FOR 18" PIPE AND LARGER.
   - THE NEAT-LINE PAYMENT LIMITS FOR TRENCH BACKFILL MATERIALS SHALL BE BASED UPON THE MAXIMUM ALLOWABLE TRENCH WIDTH AS SHOWN ABOVE.

2. NATIVE MATERIAL, IF ALLOWED FOR TRENCH BACKFILL, SHALL MEET THE REQUIREMENTS OF SELECT BORROW PER THE SPECIFICATIONS. TRENCH BACKFILL SHALL BE COMPACTED TO A MINIMUM OF NINETY-FIVE PERCENT (95%) OF MODIFIED PROCTOR IN THE RIGHT-OF-WAY AND IMPROVED EASEMENTS AND TO NINETY PERCENT (90%) IN UNIMPROVED EASEMENT AREAS. SEE THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

3. NATIVE MATERIAL, IF ALLOWED FOR RIGID PIPE BEDDING, SHALL BE SAND AND GRAVEL WITH NO MATERIAL LARGER THAN 1 1/2". SEE THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

4. THE NEAT-LINE LIMITS SHOWN WILL BE USED TO CALCULATE THE MAXIMUM QUANTITY OF TRENCH BACKFILL AND SURFACE RESTORATION MATERIALS ALLOWED. PAYMENT FOR BEDDING GRAVEL WILL BE CONSIDERED INCIDENTAL TO PAYMENT MADE FOR PIPE. PAYMENT FOR FOUNDATION ROCK WILL BE BASED UPON THE QUANTITIES USED AS DIRECTED BY THE DISTRICT. SEE THE CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION.
NOTES:

1. WHERE UTILITY LINES CROSS UNDER EXISTING NON–METALLIC WATER MAIN SUCH AS ASBESTOS CEMENT, PERMASTRAN, OR CLASS 200 PVC, BACKFILL WITH CONTROLLED DENSITY FILL (CDF) BETWEEN THE BEDDING MATERIAL AND THE SPRING LINE (MID–POINT) OF THE NON–METALLIC PIPE. TRENCH BACKFILL CAN THEN BE USED ABOVE THE CDF TO THE FINAL GRADE.

2. IF NON–METALLIC PIPE MUST BE REMOVED, AS DETERMINED BY THE DISTRICT, REPLACE WITH CL. 62 DUCTILE IRON PIPE, SIZED TO MATCH. D.I. PIPE TO EXTEND A MINIMUM OF 18" INTO UNDISTURBED SOIL. (ALL APPLICABLE ENVIRONMENTAL PROTECTION AGENCY, PUGET SOUND AIR POLLUTION CONTROL AGENCY, AND LABOR AND INDUSTRY REQUIREMENTS AND REGULATIONS SHALL BE MET IN CUTTING, HANDLING OR DISPOSING OF ASBESTOS CEMENT PIPE).
NOTES:

1. PIPE ANCHORS SHALL BE INSTALLED ON ALL SLOPES GREATER THAN 20% WITH SPACING AS FOLLOWS:
   
   A. NOT GREATER THAN 36 FT. ON GRADES FROM 20% TO 35%
   B. NOT GREATER THAN 24 FT. ON GRADES FROM 35% TO 50%
   C. NOT GREATER THAN 16 FT. ON GRADES GREATER THAN 50%

2. IF CARRIER PIPE IS INSTALLED IN CASING PIPE, INSTALL FLANGE OR BRACKET TO SECURE PIPE ANCHOR TO CASING PIPE.
NOTES:

HYDROMATIC HPG–200 COMPLETE PACKAGED SEWER GRINDER LIFT STATION TO INCLUDE THE FOLLOWING:

1. GRINDER PUMP WITH 2HP SUBMERSIBLE SINGLE PHASE MOTOR (ADEQUATE FOR SINGLE RESIDENCE UP TO 100’ HEAD AT 5’ IMPELLER DIA.)
2. TWO SEALED FLOAT TYPE MERCURY SWITCHES FOR LEVEL CONTROL
3. ONE FLOAT SWITCH FOR ALARM CONTROL
4. 1” NPT MALE CONDUIT OUTSIDE OF SUMP FOR CONTROL WIRING
5. DISCHARGE PIPING SHALL INCLUDE A CHECK VALVE, A GATE VALVE AND NPT FEMALE CONNECTION OUTSIDE OF SUMP (DIA. PER PRESSURE PIPE DIA.)
6. INFLUENT PIPING SHALL PROVIDE HUB FOR PVC PIPE OUTSIDE OF SUMP (DIA. PER SIDESEWER DIA.)
7. FIBERGLASS SUMP BASIN 24” I.D. x 5’-0” HIGH (PER BULLETIN SPG–604 (HYDROMATIC OR EQUAL))
8. NEMA 3R LOCKING CONTROL PANEL WALL MOUNTED
9. RED ALARM LIGHT PANEL, WALL MOUNTED WITH GENERATOR HOOK–UP
10. SEE ADDITIONAL INFORMATION PER STANDARD SEWER DETAIL 14C GENERAL NOTES

SINGLE FAMILY GRINDER PUMP STATION
HYDROMATIC

NOT TO SCALE
SINGLE FAMILY GRINDER PUMP STATION
E-ONE

NOTES:

ENVIRONMENTAL ONE (E-ONE) DH071 COMPLETE PACKAGED SEWAGE GRINDER PUMP STATION TO INCLUDE THE FOLLOWING:

1. ONE SIMPLEX GRINDER PUMP WITH 70 GAL CAPACITY AND HDPE BASIN (ADEQUATE FOR SINGLE RESIDENCE)
2. ASSEMBLED IN THE BASIN - NEMA 6P ELECTRICAL QUICK DISCONNECT, PUMP REMOVAL SYSTEM, STAINLESS STEEL DISCHARGE ASSEMBLY/SHUT-OFF VALVE, AND ANTI-SIPHON VALVE/CHECK VALVE
3. NEMA 4X ALARM PANEL EQUIPPED WITH CIRCUIT BREAKERS AND NECESSARY INTERNAL WIRING CONTROLS
4. DISCHARGE PIPING SHALL INCLUDE FEMALE PIPE THREAD FOR PRESSURE PIPE CONNECTION (DIA. PER PRESSURE PIPE DIA, 1½" MIN)
5. INFLOW PIPING SHALL PROVIDE INLET GROMMET FOR SDR 35 PVC PIPE (DIA. PER SIDESEWER DIA.)
6. WALL MOUNTED ALARM PANEL, INCLUDING RED ALARM LIGHT AND GENERATOR RECEPTACLE
7. SEE ADDITIONAL INFORMATION PER STANDARD SEWER DETAIL 14C GENERAL NOTES

NORTHSHORE UTILITY DISTRICT
2019 STANDARD SEWER DETAILS
NOTES:

1. THE MINIMUM REQUIREMENTS FOR A RESIDENTIAL SEWAGE PUMPING SYSTEM CONNECTING A SINGLE RESIDENCE TO THE DISTRICT'S SYSTEM ARE SPECIFIED AS FOLLOWS. THE DISTRICT ACCEPTS NO RESPONSIBILITY FOR THE DESIGN, OPERATION AND MAINTENANCE OF SUCH PRIVATELY OWNED AND OPERATED SYSTEMS. INSTALLATION OF GRINDER PUMP SYSTEMS MUST BE PREAPPROVED BY THE DISTRICT.

2. ALL EQUIPMENT AND ACCESSORIES SHALL BE STANDARD MANUFACTURED ITEMS AND THOSE COMING IN DIRECT CONTACT WITH SEWAGE SHALL BE SPECIFICALLY MANUFACTURED FOR SEWAGE USE.

3. LIFT STATION MUST BE LOCATED OUTSIDE THE BUILDING. IF THE STATION IS COMPLETELY BURIED, INSTALL 48" I.D. MANHOLE WITH FRAME AND COVER OVER STATION FOR ACCESS.

4. THE PUMP SHALL BE A-ONE DH071 OR HYDROMATIC HPC-200, AS SPECIFIED HEREIN. NO OTHER PUMP TYPES SHALL BE PERMISSIBLE.

5. A 14 GAUGE TRACER WIRE, CONTINUOUS POLYETHYLENE INSULATED COPPER, SHALL BE WRAPPED AROUND THE ENTIRE COURSE OF THE POLY PRESSURE PIPE AND BROUGHT TO THE SURFACE IN THE CLEAN-OUT BOX AND AT THE STATION.

6. POLY PRESSURE PIPE TO BE 1 1/4" MIN. SIDR 7, 250 PSI POLYETHYLENE PIPE, OR DISTRICT APPROVED EQUAL.

7. POLY PRESSURE PIPE TO BE INSTALLED AT A CONTINUOUS UPHILL GRADE WITH NO JOINTS OR COUPLINGS IF PIPE RUN IS UNDER 300 FEET.

8. DETECTOR TAPE REQUIRED 1" ABOVE PIPING WHEN POLY PRESSURE PIPE CROSSES OTHER PROPERTIES OR IS LOCATED ALONG COMMON ACCESS ROADS.

9. EVERY INSTALLATION SHALL BE EQUIPPED WITH A WALL MOUNTED ALARM PANEL, INCLUDING RED ALARM LIGHT AND GENERATOR RECEPTACLE.

SINGLE FAMILY GRINDER PUMP STATION
DISCHARGE PIPING/GENERAL NOTES

NOT TO SCALE

NORTHSHORE UTILITY DISTRICT

2019 STANDARD SEWER DETAILS
EXISTING CONCRETE BASE PLAN

F.R.P./P.P. LINER PLAN

NOTES:

1. IF P.P. BASE LINER IS UTILIZED, A MINIMUM SLOPE OF 0.06' IS ACCEPTABLE ACROSS THE INVERT CHANNEL. THE F.R.P. BASE LINER SHALL REQUIRE THE DISTRICT STANDARD MINIMUM SLOPE OF 0.1' ACROSS THE INVERT CHANNEL.

2. THE NEW CHANNEL SHALL HAVE NO SHARP EDGES AND SHALL DIRECT FLOW TOWARDS EXISTING FLOW DIRECTION. NO 90° BENDS IN THE CHANNELING.

3. CONCRETE BASES SHALL BE RE-CHANNELED USING 3,000 PSI STRUCTURAL CONCRETE.

4. FIBER REINFORCED PLASTIC (F.R.P.) AND POLYPROPYLENE (P.P.) BASE LINERS SHALL BE RE-GLASED BY A CERTIFIED SERVICE TECHNICIAN TO ACCOMMODATE NEW CONNECTION, PLEASE CONTACT PREDL SYSTEMS (WWW.PREDLSYSTEMS.COM) FOR CERTIFIED TECHNICIANS THAT CAN PERFORM THIS WORK.

5. SEE NUD SEWER DETAIL #1 FOR PRECAST CONCRETE MANHOLE, TOP SECTION, LADDER, AND STEPS.

6. CROWN OF NEW PIPE CONNECTION SHALL MATCH EXISTING CHANNEL'S CROWN OR AS APPROVED BY DISTRICT.

NEW CONNECTION TO EXISTING MANHOLE

NOT TO SCALE

NORTHSHORE UTILITY DISTRICT
2019 STANDARD SEWER DETAILS