

## SADDLE MANHOLE

NOT TO SCALE

### DETAIL APPROVALS

EDITOR *TMC*

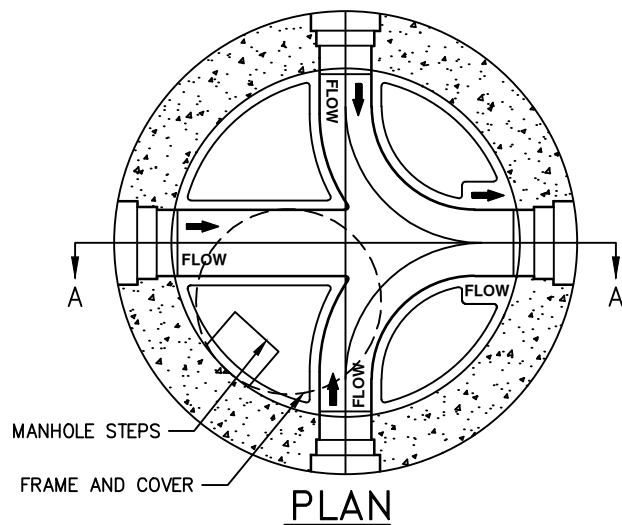
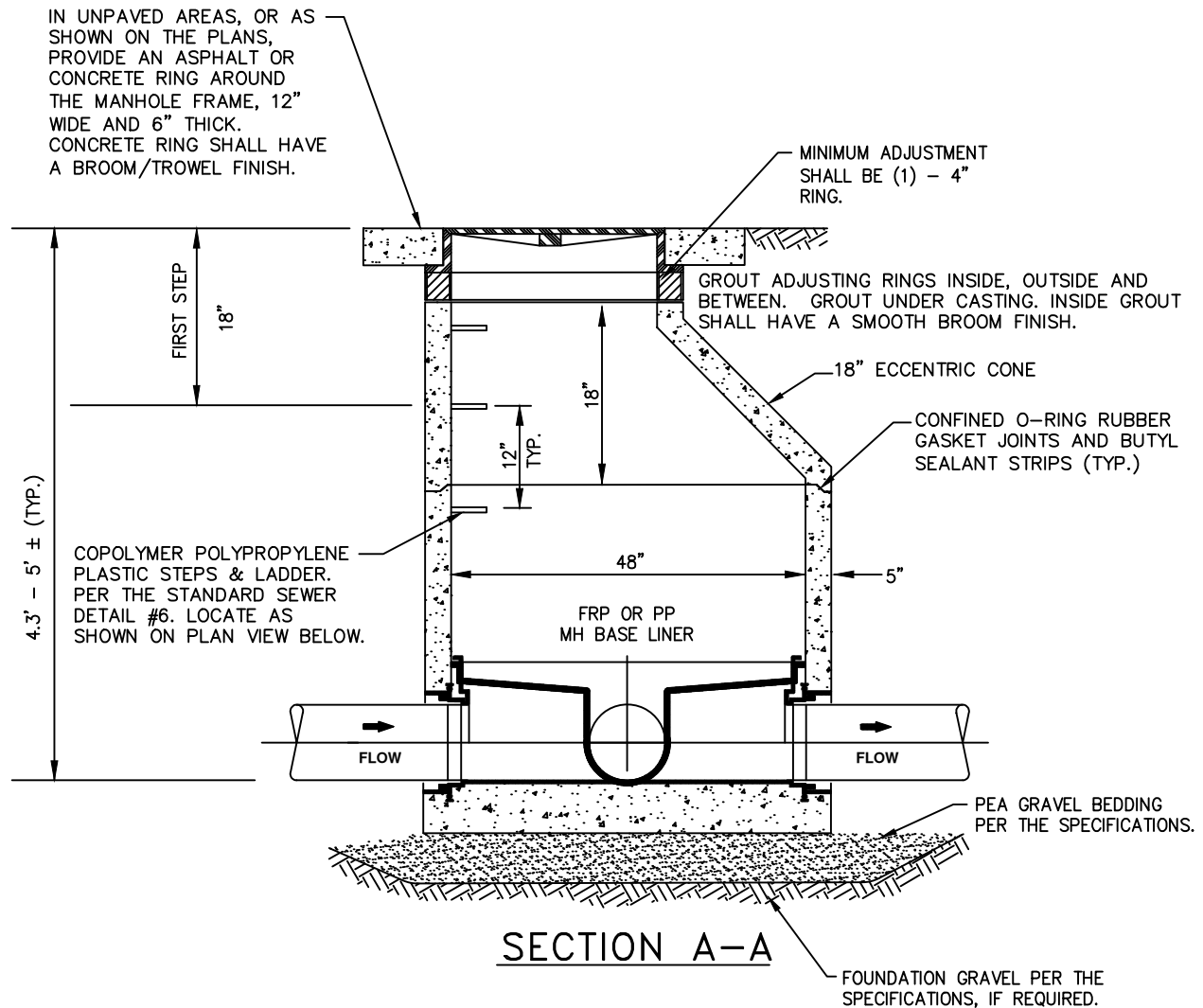
MANAGER *SJD*

## NORTHSHORE UTILITY DISTRICT

### 2023 STANDARD SEWER DETAILS

2

LAST UPDATED  
FEBRUARY 2020



#### NOTES:

1. THE MANHOLE BASE LINER SHALL BE A FIBERGLASS REINFORCED PLASTIC (FRP) OR POLYPROPYLENE (PP) BASE LINER SYSTEM PER THE ENGINEERING SPECIFICATIONS. FOR PRIVATE MANHOLES, CONCRETE CHANNELS WILL BE ALLOWED.
2. USE 18" ECCENTRIC CONE AND 2' BASE FOR SHALLOW MANHOLE APPLICATION.
3. IF PP BASE LINER IS UTILIZED, A MINIMUM SLOPE OF 0.06' IS ACCEPTABLE ACROSS THE INVERT CHANNEL. THE FRP 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. ALL PICK HOLES SHALL BE GROUTED ON THE INSIDE AND OUTSIDE OF MANHOLE.
6. MANHOLE LID SHALL BE ORIENTED PER THE DISTRICT'S DIRECTION.

## PRECAST SHALLOW MANHOLE W/ BASE LINER

NOT TO SCALE

#### DETAIL APPROVALS

EDITOR *TMC*

MANAGER *SJD*

## NORTHSHORE UTILITY DISTRICT

### 2023 STANDARD SEWER DETAILS

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LAST UPDATED  
FEBRUARY 2020

SEE NUD SEWER  
DETAIL #1 FOR  
MANHOLE TOP  
SECTION.

RELINER<sup>®</sup> INSIDE  
DROP BOWL  
AND FORCE  
LINE HOOD

INCOMING PIPE TO BE  
FLUSH WITH MANHOLE WALL.

INSIDE DROP PIPING  
TO MATCH THE  
DIAMETER OF THE  
INCOMING SEWER MAIN.

FLOW

CORE DRILL OPENING,  
KOR-N-SEAL PIPE-TO  
MANHOLE CONNECTOR BY  
NPC, INC.

PRECAST CONCRETE  
MANHOLE, STEPS AND  
LADDER PER THE  
STANDARD SEWER  
DETAIL #6.

SDR 35  
PVC PIPE

STAINLESS-STEEL STRAP  
BOLTED WITH  
STAINLESS-STEEL LAG  
BOLTS TO MANHOLE. 2  
SETS MINIMUM, 6'-0"  
MAXIMUM SPACING.

FRP OR PP  
MH BASE LINER

UNDISTURBED EARTH (TYP.)

SDR 35 PEXGSK 90° BEND, TURN  
DOWNSTREAM. SEE NOTE 2.

FLOW

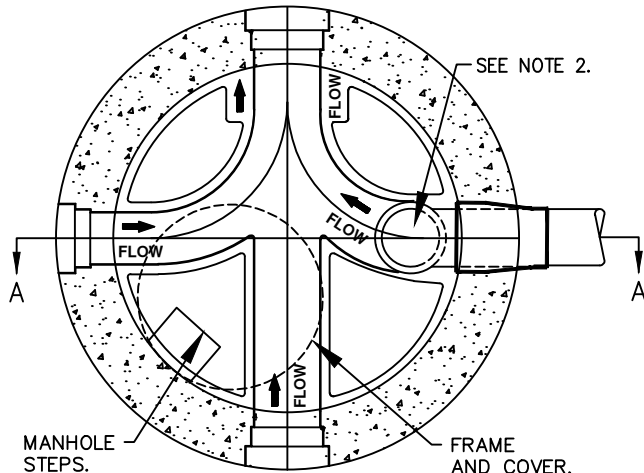
PEA GRAVEL BEDDING PER THE  
SPECIFICATIONS.

FOUNDATION GRAVEL PER THE  
SPECIFICATIONS, IF REQUIRED.

## SECTION A-A

### NOTES:

1. THE MANHOLE BASE LINER SHALL BE A FIBERGLASS REINFORCED PLASTIC (FRP) OR POLYPROPYLENE (PP) BASE LINER SYSTEM PER THE ENGINEERING SPECIFICATIONS.
2. BASE LINER 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.
3. EXISTING MANHOLES SHALL HAVE THE BEND SET ON TOP OF THE EXISTING BENCH, ORIENTED TOWARDS THE DOWNSTREAM OUTLET, AND GROUTED IN-PLACE. ADDITIONAL PVC PIPE MAY BE REQUIRED TO DIRECT FLOW TO THE DOWNSTREAM OUTLET.
4. IF PP BASE LINER IS UTILIZED, A MINIMUM SLOPE OF 0.06' IS ACCEPTABLE ACROSS THE INVERT CHANNEL. THE FRP BASE LINER SHALL REQUIRE THE DISTRICT STANDARD MINIMUM SLOPE OF 0.1' ACROSS THE INVERT CHANNEL.
5. MARKER POSTS MAY BE REQUIRED IN EASEMENTS.
6. ALL PICK HOLES SHALL BE GROUTED ON THE INSIDE AND OUTSIDE OF MANHOLE.
7. MANHOLE LID SHALL BE ORIENTED PER THE DISTRICT'S DIRECTION.



## PLAN

# INSIDE DROP MANHOLE W/ BASE LINER

NOT TO SCALE

### DETAIL APPROVALS

EDITOR *TMC*

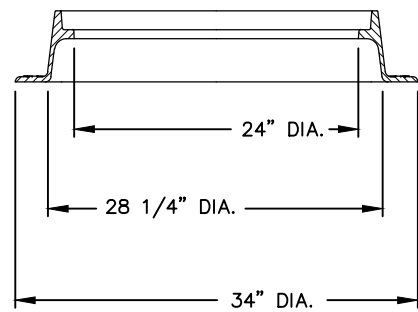
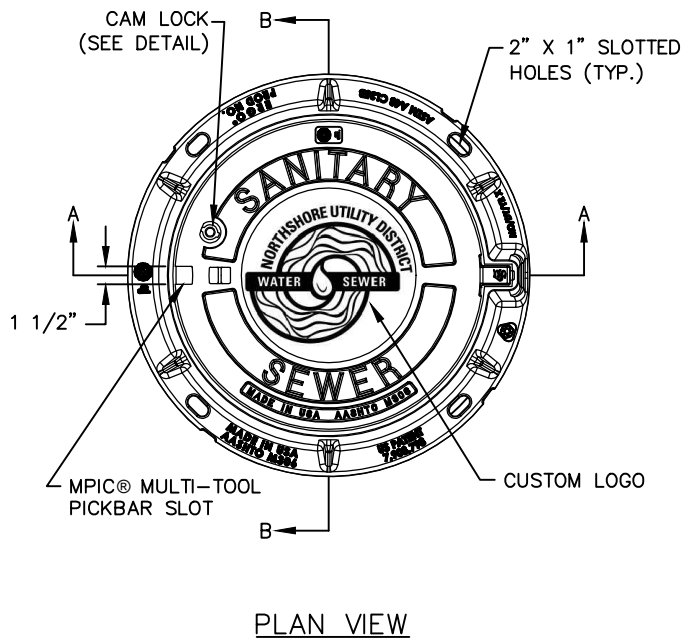
MANAGER *SJD*

## NORTHSHORE UTILITY DISTRICT

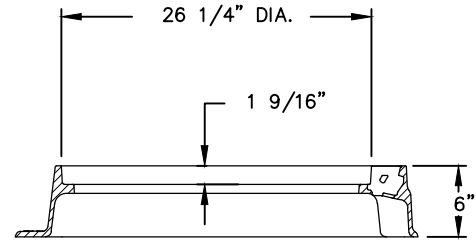
### 2023 STANDARD SEWER DETAILS

4

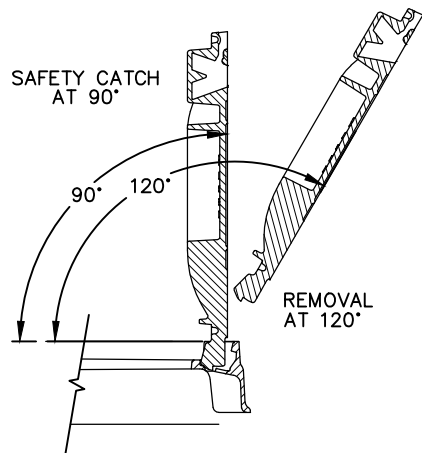
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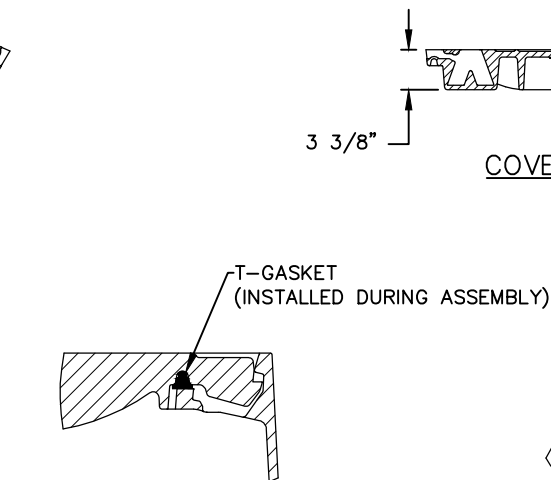
FRAME SECTION B-B



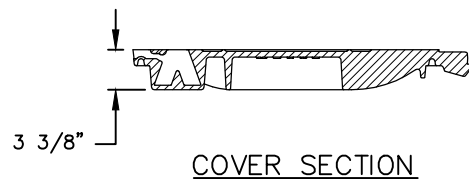
FRAME SECTION A-A



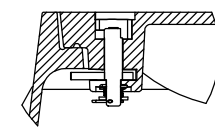
HINGE POSITIONS



HINGE & GASKET VIEW



COVER SECTION



CAM LOCK VIEW

**NOTE:**

1. MANHOLE FRAME AND COVER SHALL BE EAST JORDAN IRON WORKS ERGO ASSEMBLY, PART NUMBER 001040105L01.
2. FOR PRIVATE MANHOLES, FRAME AND COVER SHALL BE EAST JORDAN IRON WORKS ERGO ASSEMBLY, PART NUMBER 00104043L01. MANHOLE LID TO SAY "SEWER". MANHOLE LID NOT TO INCLUDE NUD LOGO OR NAME.

## MANHOLE LOCKING FRAME AND COVER

NOT TO SCALE

**DETAIL APPROVALS**

**EDITOR** TMC

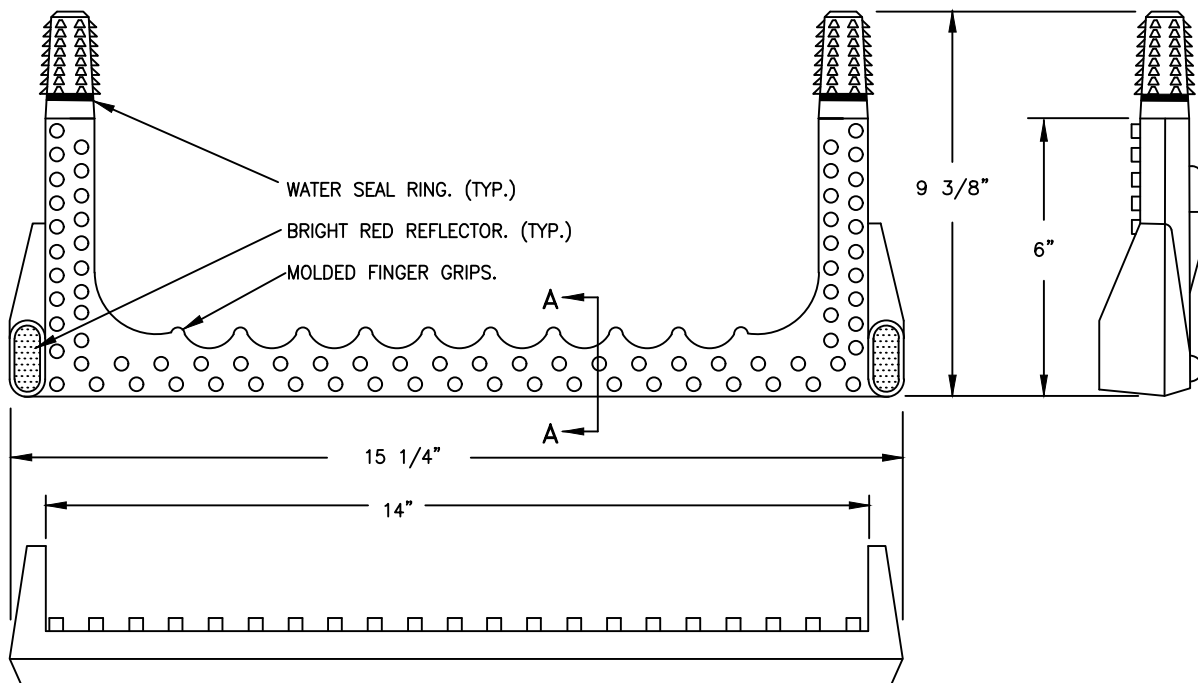
**MANAGER** SJD

## NORTHSHORE UTILITY DISTRICT

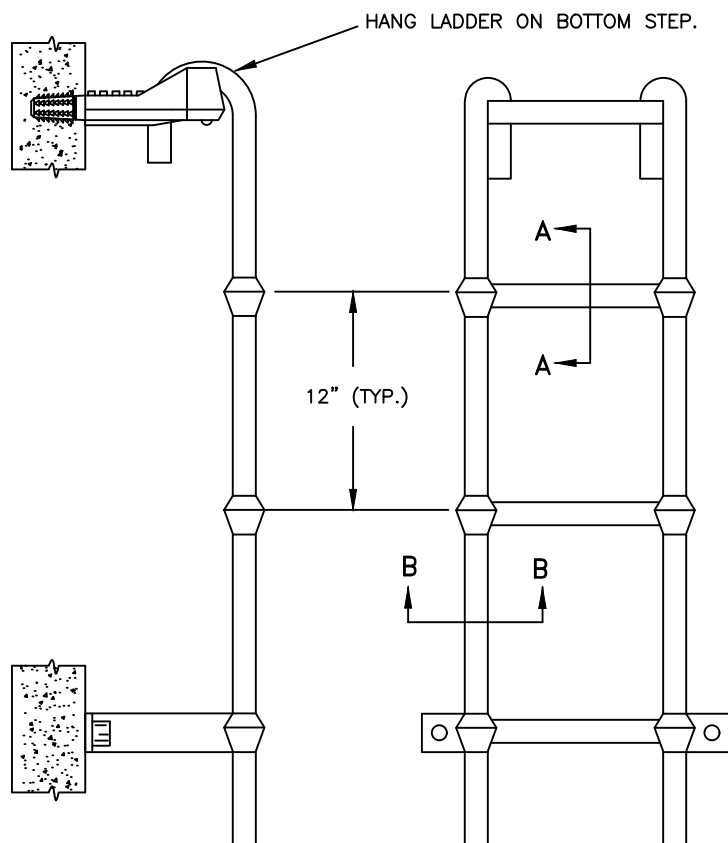
### 2023 STANDARD SEWER DETAILS

**5**

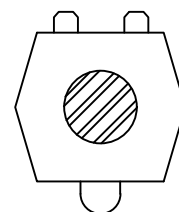
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FEBRUARY 2020



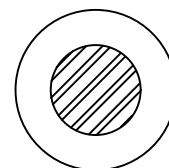
STEP



HANGING LADDER



SECTION A-A



SECTION B-B

NOTES :

1. STEPS TO BE LANE INTERNATIONAL #P-14938 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.
3. IF REQUIRED IN NECK/ADJUSTING RINGS, HAND HOLD TO BE LANE INTERNATIONAL #HAND HOLD.

**MANHOLE STEPS AND LADDER**

NOT TO SCALE

**DETAIL APPROVALS**

**EDITOR** TMC

**MANAGER** SJD

**NORTHSHORE UTILITY DISTRICT**

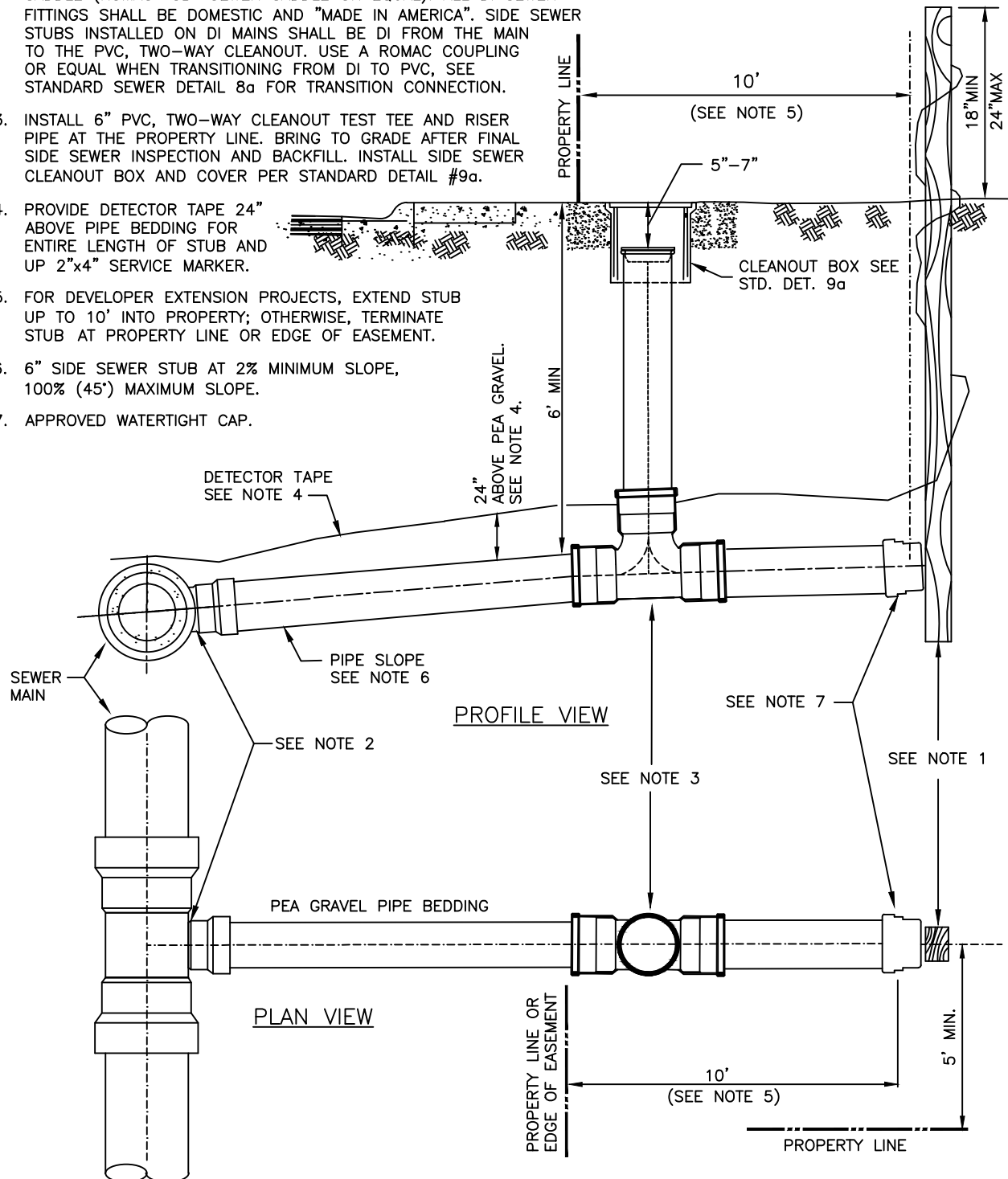
**2023 STANDARD SEWER DETAILS**

**6**

LAST UPDATED  
FEBRUARY 2022

## NOTES:

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). ALL DI SEWER FITTINGS SHALL BE DOMESTIC AND "MADE IN AMERICA". SIDE SEWER STUBS INSTALLED ON DI MAINS SHALL BE DI FROM THE MAIN TO THE PVC, TWO-WAY CLEANOUT. USE A ROMAC COUPLING OR EQUAL WHEN TRANSITIONING FROM DI TO PVC, SEE STANDARD SEWER DETAIL 8a FOR TRANSITION CONNECTION.
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 #9a.
4. PROVIDE DETECTOR TAPE 24" ABOVE PIPE BEDDING FOR ENTIRE LENGTH OF STUB AND UP 2"x4" SERVICE MARKER.
5. FOR DEVELOPER EXTENSION PROJECTS, EXTEND STUB UP TO 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.



## NEW SIDE SEWER STUB CONNECTION TO EXISTING OR NEW MAIN

NOT TO SCALE

### DETAIL APPROVALS

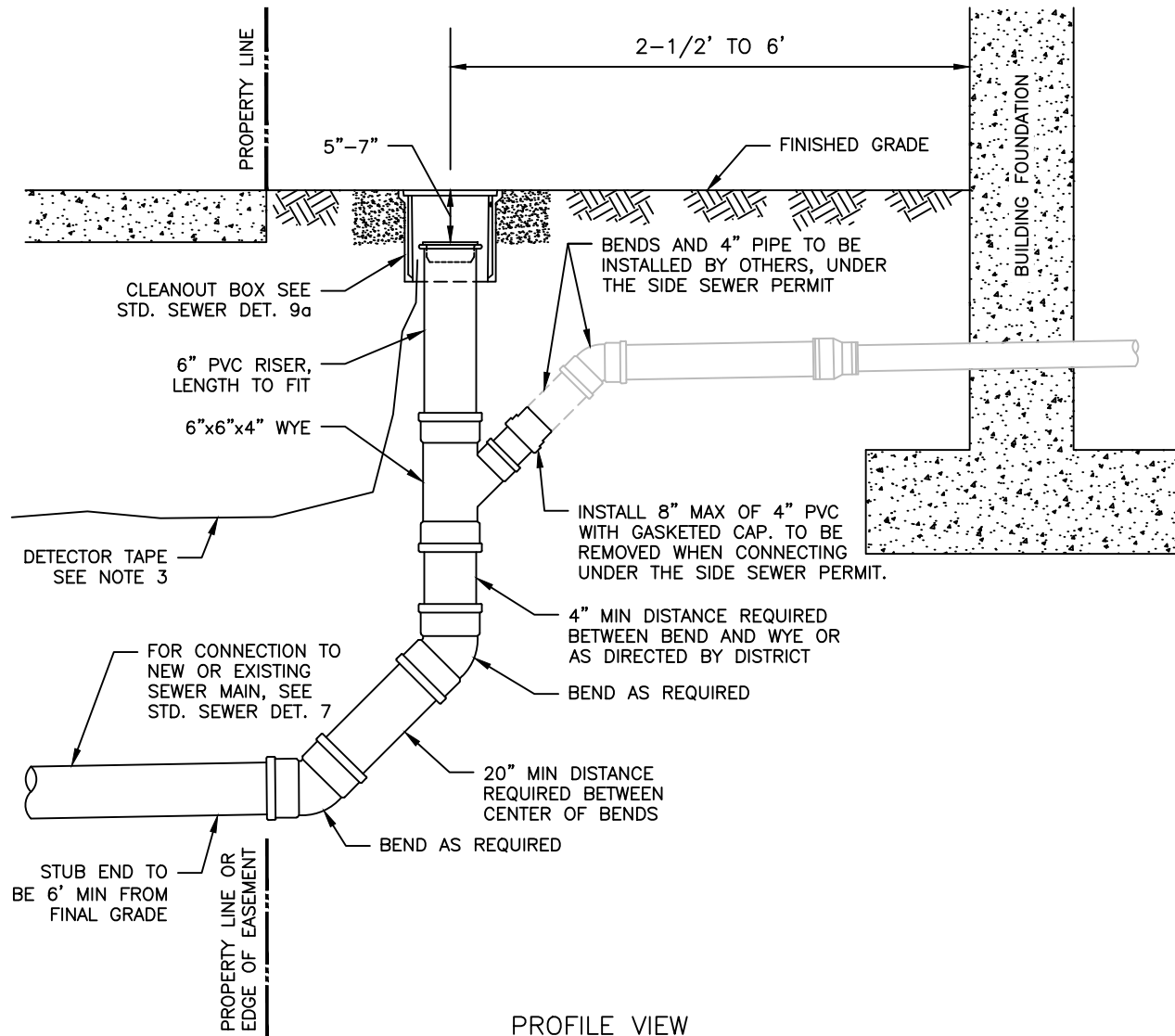
EDITOR *TMC*

MANAGER *SJD*

## NORTHSHORE UTILITY DISTRICT 2023 STANDARD SEWER DETAILS

7

LAST UPDATED  
JANUARY 2023



#### NOTES:

1. THIS SIDE SEWER CONNECTION IS ONLY ALLOWED FOR CONSTRAINED SITES AS DETERMINED BY THE DISTRICT. FOR ALL OTHER SIDE SEWER CONNECTIONS, SEE STANDARD SEWER DETAIL 7.
2. A SIDE SEWER PERMIT MUST BE OBTAINED FOR SIDE SEWER CONNECTION FROM WYE TO BUILDING FOUNDATION.
3. PROVIDE DETECTOR TAPE 24" ABOVE PIPE BEDDING FOR ENTIRE LENGTH OF STUB AND INTO THE CLEANOUT BOX.
4. PIPE BEDDING TO BE PEA GRAVEL PER STANDARD SEWER DETAIL 11.
5. ALL PIPE TO BE AT 2% MINIMUM SLOPE.

## SIDE SEWER STUB CONNECTION FOR CONSTRAINED SITES

NOT TO SCALE

#### DETAIL APPROVALS

EDITOR *TMC*

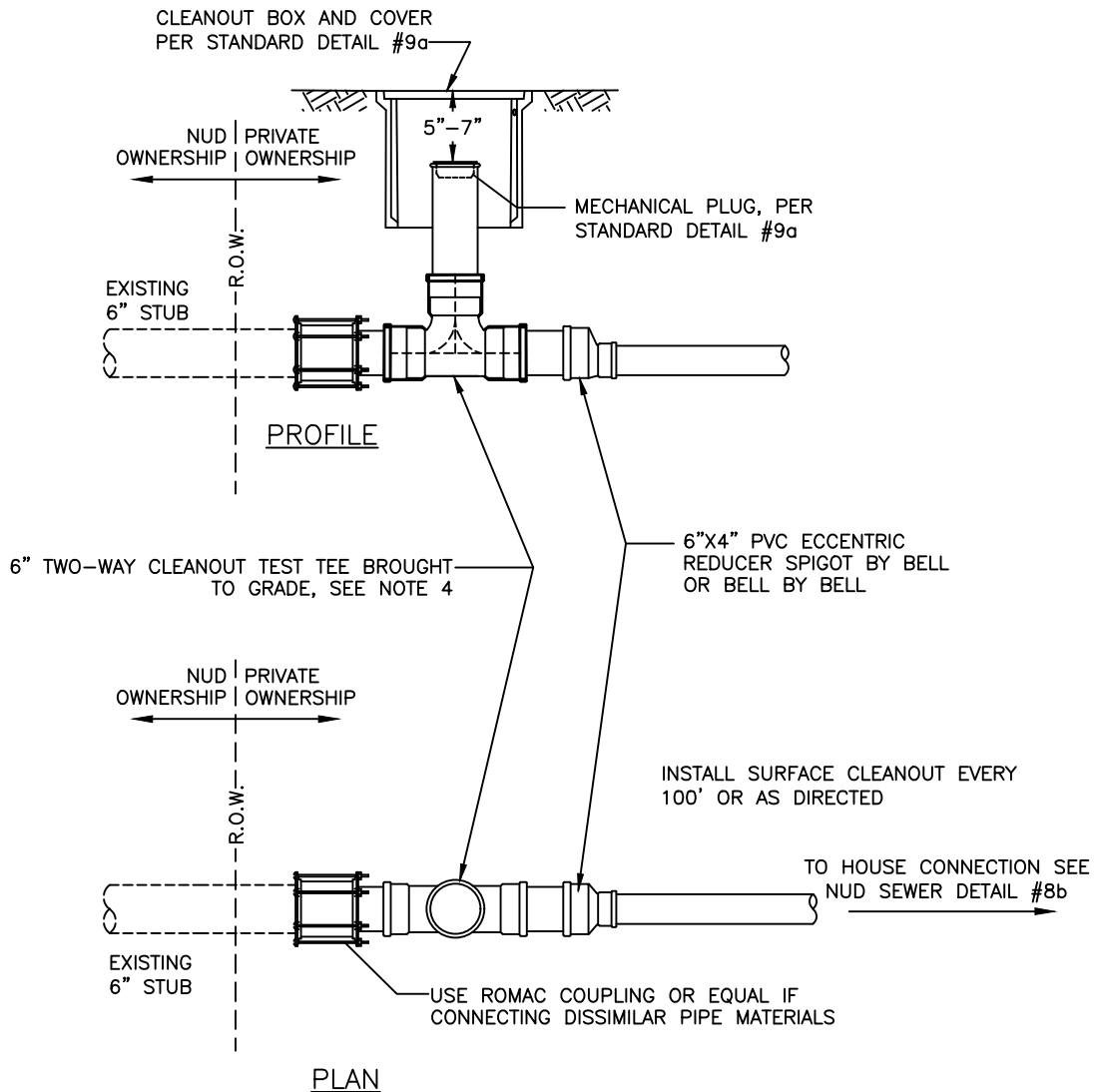
MANAGER *SJD*

**NORTHSHORE UTILITY DISTRICT**  
2023 STANDARD SEWER DETAILS

**7a**

LAST UPDATED  
JANUARY 2023





#### 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 #9a.

## SIDE SEWER CONNECTION TO EXISTING STUB

NOT TO SCALE

#### DETAIL APPROVALS

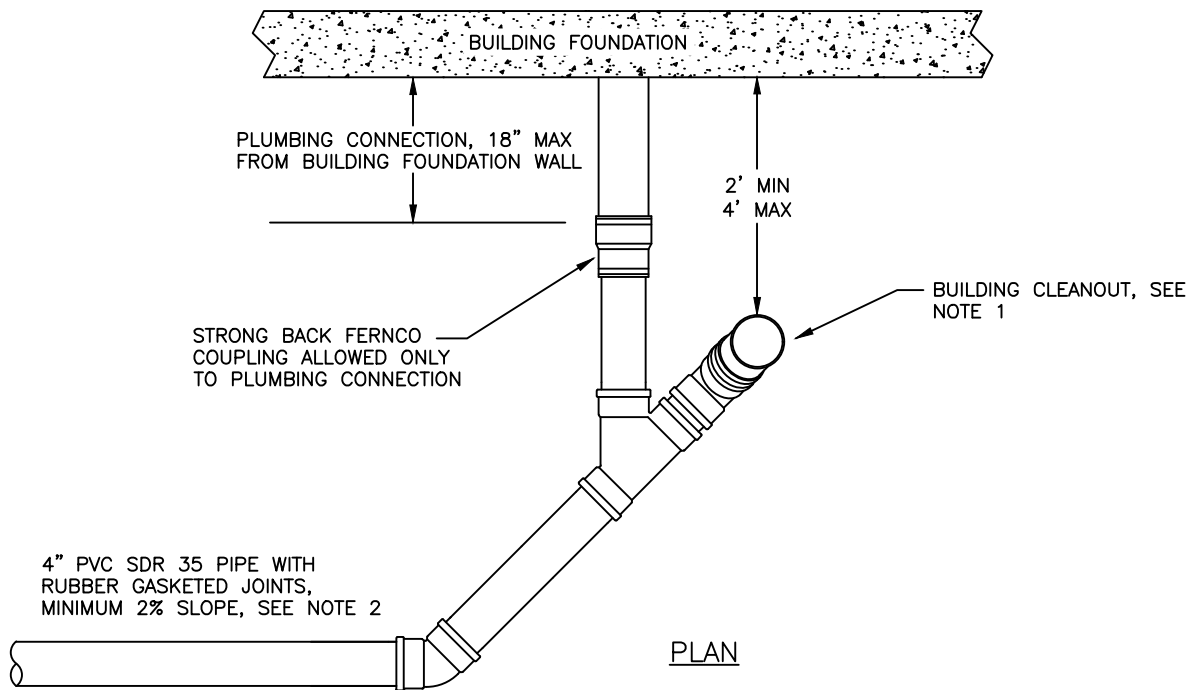
EDITOR *TMC*

MANAGER *SJD*

**NORTHSHORE UTILITY DISTRICT**  
2023 STANDARD SEWER DETAILS

**8a**

LAST UPDATED  
JANUARY 2023



#### 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 SEWER DETAIL #9a.
2. FOR CLEANOUTS BROUGHT TO SURFACE NOT IN HARDSCAPE AREAS, THE CLEANOUT CAN BE BROUGHT TO GRADE AND INSTALLED IN A LANDSCAPE/IRRIGATION BOX AND PLUGGED WATERTIGHT WITH A MECHANICAL PLUG, PER STANDARD SEWER DETAIL #9a. OTHERWISE, CLEANOUTS SHALL BE BROUGHT TO WITHIN 24" OF GRADE AND PLUGGED WATERTIGHT WITH A GASKETED CAP OR PUSH PLUG.
3. ALL PIPE MATERIAL SHALL BE BELL & SPIGOT TYPE WITH RUBBER GASKET JOINT AND SHALL BE IN CONFORMANCE WITH ASTM D3034 (SDR-35).

## SIDE SEWER HOUSE CONNECTION

NOT TO SCALE

#### DETAIL APPROVALS

EDITOR TMC

MANAGER SJD

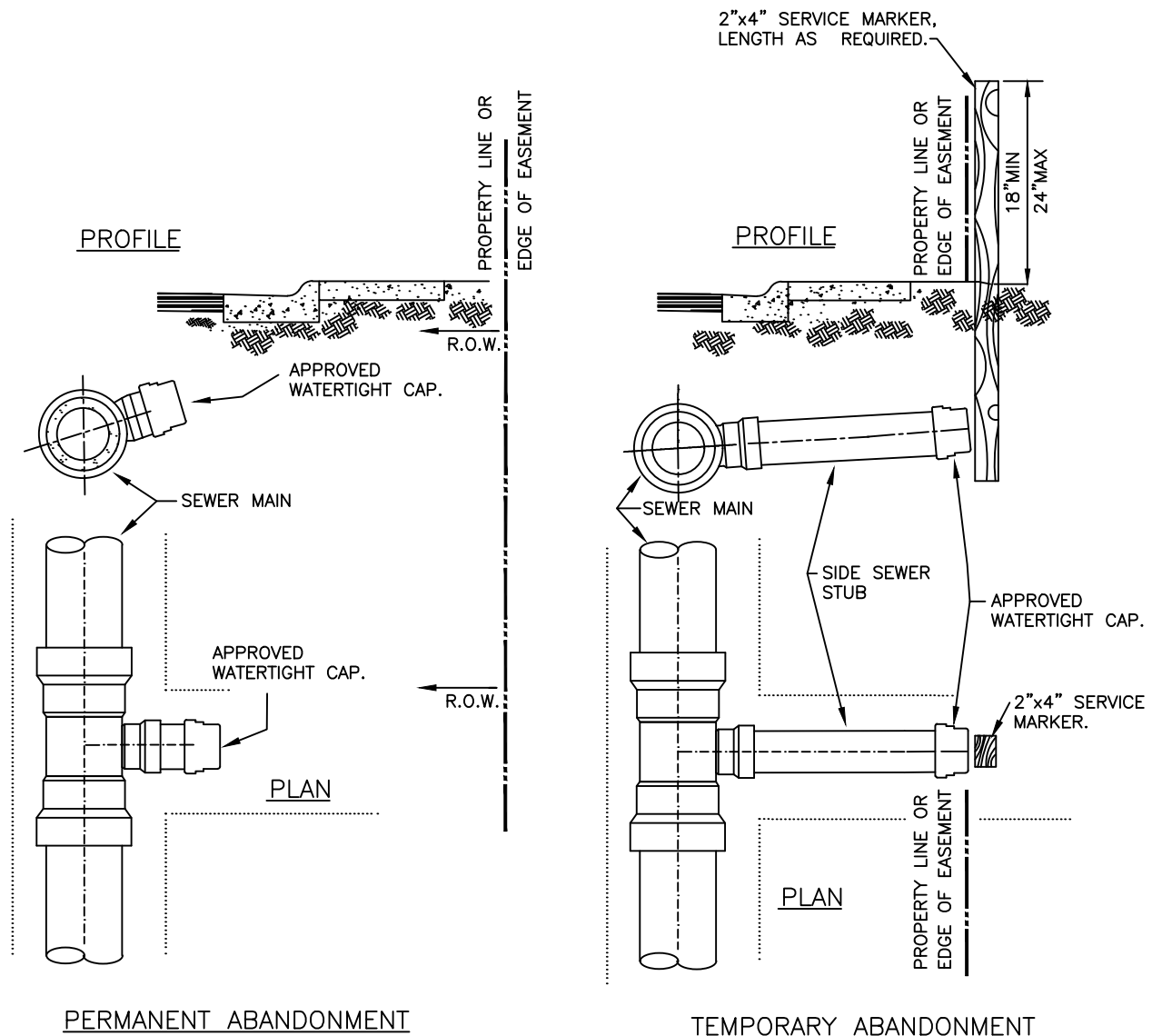
**NORTHSHORE UTILITY DISTRICT**  
2023 STANDARD SEWER DETAILS

**8b**

LAST UPDATED  
JANUARY 2023

## 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. ALTERNATIVELY, THE SIDE SEWER CAN BE PERMANENTLY ABANDONED UTILIZING A CURED IN-PLACE PIPE (CIPP) SPOT REPAIR SLEEVE INSTALLED BY DISTRICT CREWS, AT PROPERTY OWNER'S EXPENSE. CONTACT NUD PERMIT DESK AT (425) 398-4401 FOR COST AND AVAILABILITY.
3. 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.
4. PAINT PORTION OF SERVICE MARKER THAT IS ABOVE GRADE WITH WHITE PAINT. STENCIL "S/S" WITH 3" TALL BLACK LETTERS.



## SIDE SEWER CAPPING

NOT TO SCALE

### DETAIL APPROVALS

EDITOR TMC

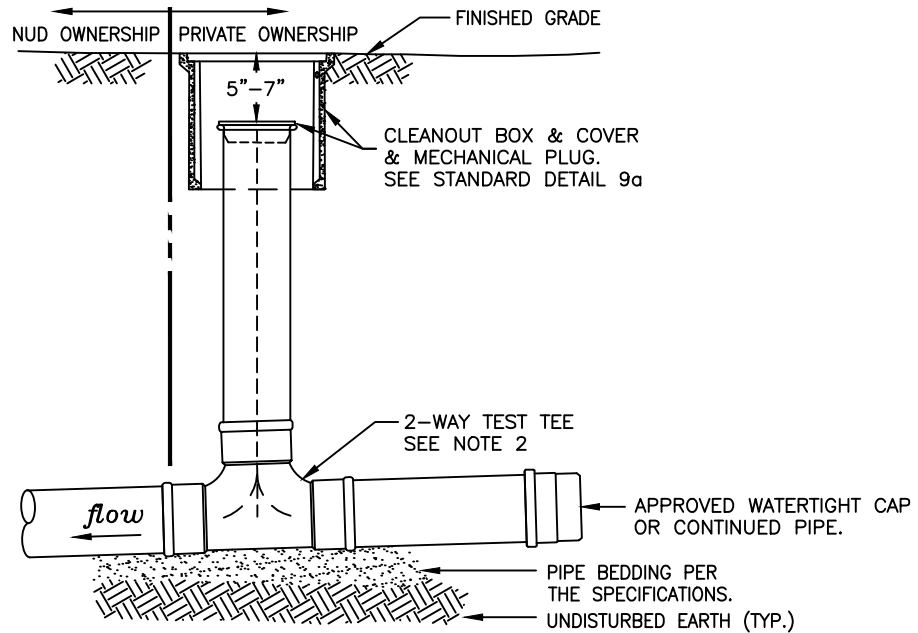
MANAGER SJD

## NORTHSHORE UTILITY DISTRICT

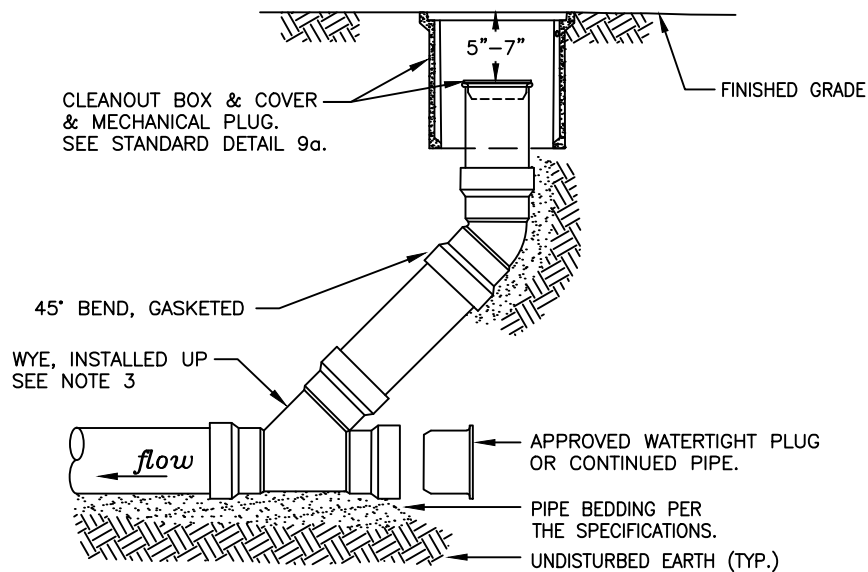
### 2023 STANDARD SEWER DETAILS

**8c**

LAST UPDATED  
APRIL 2021



2-WAY TEST TEE (EDGE OF PROPERTY) PROFILE



WYE CLEANOUT (INSIDE PROPERTY) PROFILE

**NOTES:**

1. SURFACE CLEANOUTS ARE REQUIRED AT THE R.O.W., CLEANOUTS LOCATED IN HARDSCAPE (SUCH AS SIDEWALKS, DRIVEWAYS, AND PATIOS), AND EVERY 100 FEET. THE SIDE SEWER CONNECTION AT THE MAIN LINE STUB SHALL BE A TWO-WAY CLEANOUT TEST TEE. SEE STANDARD DETAILS 7 & 8a.
2. A 2-WAY, DOUBLE SWEEP, TEST TEE IS REQUIRED TO BE INSTALLED AT EDGE OF EASEMENT OR EDGE OF PROPERTY LINE, SEE STANDARD DETAIL 7.
3. WYE SURFACE CLEANOUTS ARE TO BE INSTALLED EVERY 100' OR WHEN CLEANOUT IS IN HARDSCAPE WITHIN PROPERTY, SEE STANDARD DETAIL 9a. WYE IS NOT TO BE INSTALLED AT EDGE OF EASEMENT OR EDGE OF PROPERTY LINE. ONLY EXCEPTION FOR INSTALLATION AT EDGE OF PROPERTY OR EDGE OF EASEMENT WILL BE IF WYE IS BEING INSTALLED FOR A GRINDER PUMP CONNECTION AS SHOWN ON STANDARD DETAIL 14d.
4. ALL PIPE MATERIAL SHALL BE BELL & SPIGOT TYPE WITH RUBBER GASKET JOINT AND SHALL BE IN CONFORMANCE WITH ASTM D3034 (SDR-35).

## **SIDE SEWER SURFACE CLEANOUT**

NOT TO SCALE

**DETAIL APPROVALS**

**EDITOR** TMC

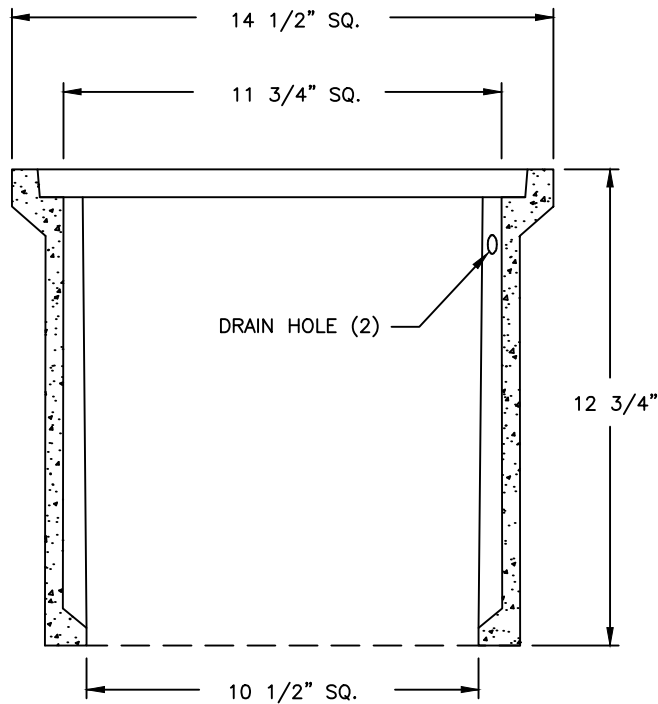
**MANAGER** SJD

## **NORTHSHORE UTILITY DISTRICT**

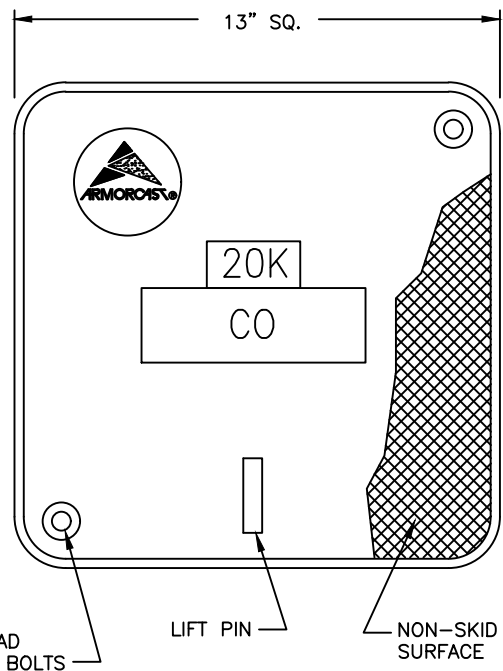
### **2023 STANDARD SEWER DETAILS**

**9**

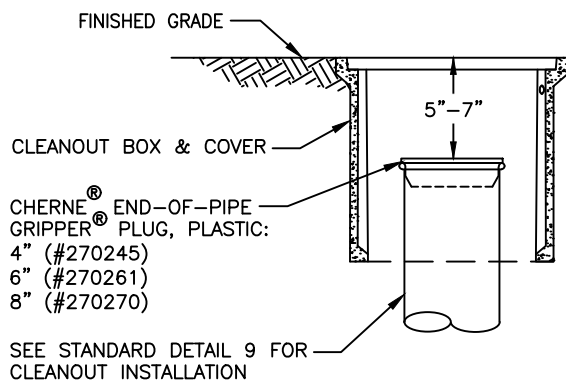
LAST UPDATED  
JANUARY 2023



ARMORCAST CLEANOUT BOX



ARMORCAST CLEANOUT COVER



INSTALLATION PROFILE

NOTES:

1. SURFACE CLEANOUTS ARE REQUIRED AT THE R.O.W., THE BUILDING CONNECTION IN HARDSCAPE (SUCH AS SIDEWALKS, DRIVEWAYS, AND PATIOS), AND EVERY 100 FEET. THE SIDE SEWER CONNECTION AT THE MAIN LINE STUB SHALL BE A TWO-WAY CLEANOUT TEST TEE. SEE STANDARD DETAILS 7 & 8a.
2. CLEANOUT BOXES AND COVERS LOCATED AT PROPERTY LINE AND IN HARDSCAPES SHALL BE ARMORCAST POLYMER CONCRETE BOX ASSEMBLY, PART #A6001423TA, H20 RATED WITH PENTAHEAD LOCKING BOLTS AND "CO" STAMPED ON COVER.
3. CLEANOUT BOXES AND COVERS LOCATED IN LANDSCAPE AREA'S WITHIN THE PROPERTY MAY BE A MINIMUM 6" ROUND OR 6" SQUARE LANDSCAPE/IRRIGATION BOX EQUIVALENT TO A CARSON TRUSST 708, NDS 107BC, OR NDS D1000-SG.

**SURFACE CLEANOUT BOX**

NOT TO SCALE

**DETAIL APPROVALS**

**EDITOR** TMC

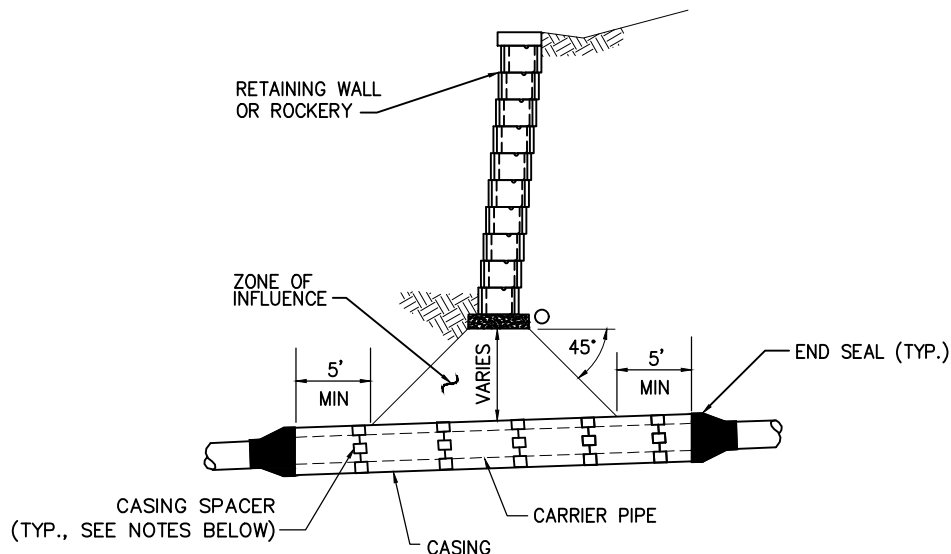
**MANAGER** SJD

**NORTHSHORE UTILITY DISTRICT**

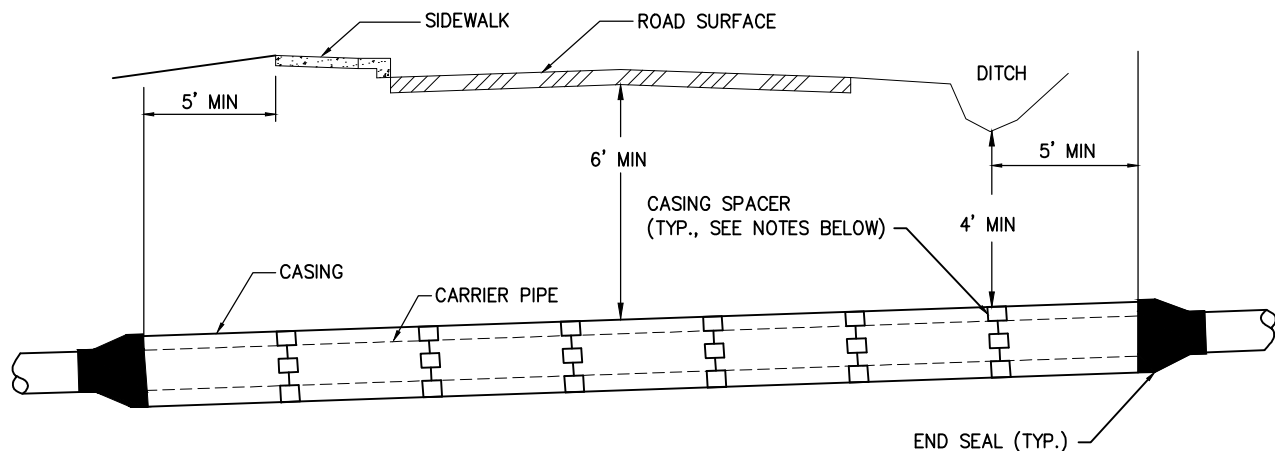
**2023 STANDARD SEWER DETAILS**

**9a**

LAST UPDATED  
JANUARY 2023



ROCKERY OR WALL SECTION



ROADWAY SECTION

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.

**CASING PIPE**

NOT TO SCALE

**DETAIL APPROVALS**

**EDITOR** GSM

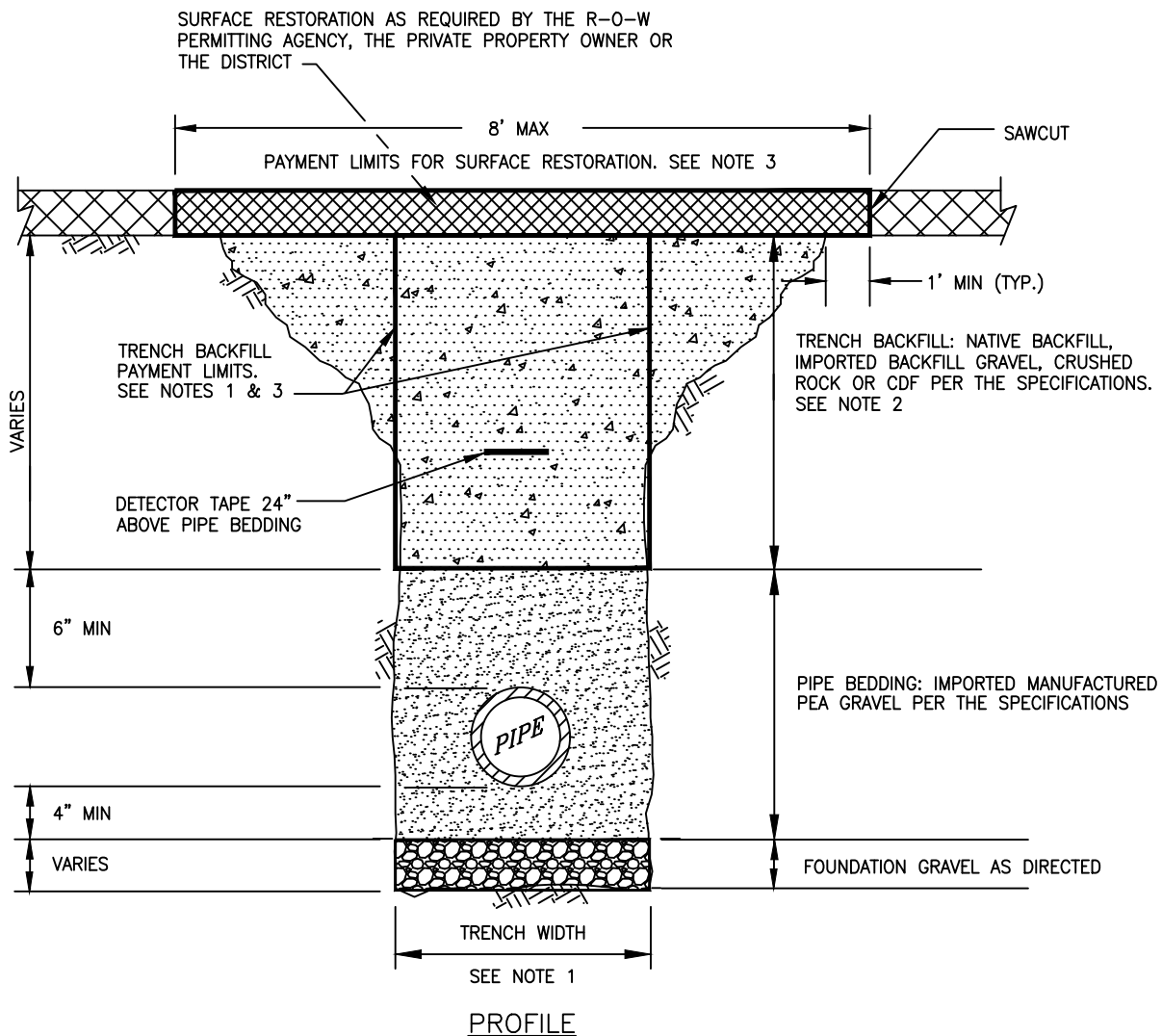
**MANAGER** DPK

**NORTHSHORE UTILITY DISTRICT**

**2023 STANDARD SEWER DETAILS**

**10**

LAST UPDATED  
FEBRUARY 2014



#### NOTES:

1. TRENCH WIDTH:

MINIMUM: PIPE O.D. + 24" (12" EACH SIDE OF PIPE).

MAXIMUM: 40" FOR 15"Ø PIPE AND SMALLER.

(1 1/2" X I.D.) + 18" FOR 18"Ø 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. 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.
4. RECYCLED CONCRETE WILL NOT BE ALLOWED AS PIPE BEDDING OR TRENCH BACKFILL FOR DI PIPE.
5. ALL DUCTILE IRON PIPE REQUIRES POLYETHYLENE ENCASEMENT. SEE THE DISTRICTS MATERIALS OF CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL INFORMATION.

## **TYPICAL TRENCH SECTION & PAYMENT LIMITS**

NOT TO SCALE

#### **DETAIL APPROVALS**

**EDITOR** TMC

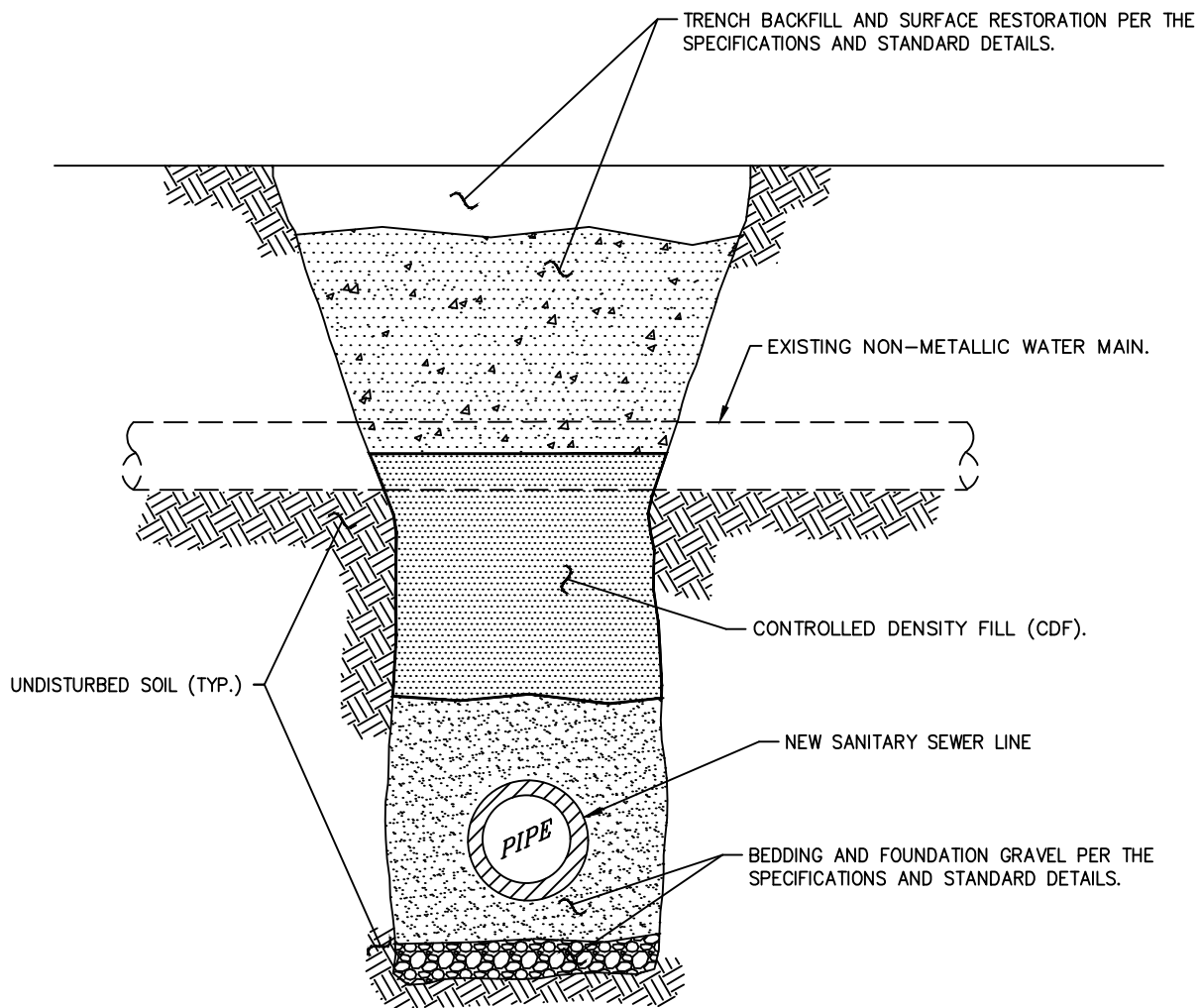
**MANAGER** SJD

## **NORTHSHORE UTILITY DISTRICT**

### **2023 STANDARD SEWER DETAILS**

**11**

LAST UPDATED  
JANUARY 2023



PROFILE

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. 52 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).

## NON-METALLIC PIPE CROSSING

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DETAIL APPROVALS

EDITOR TDC

MANAGER DPK

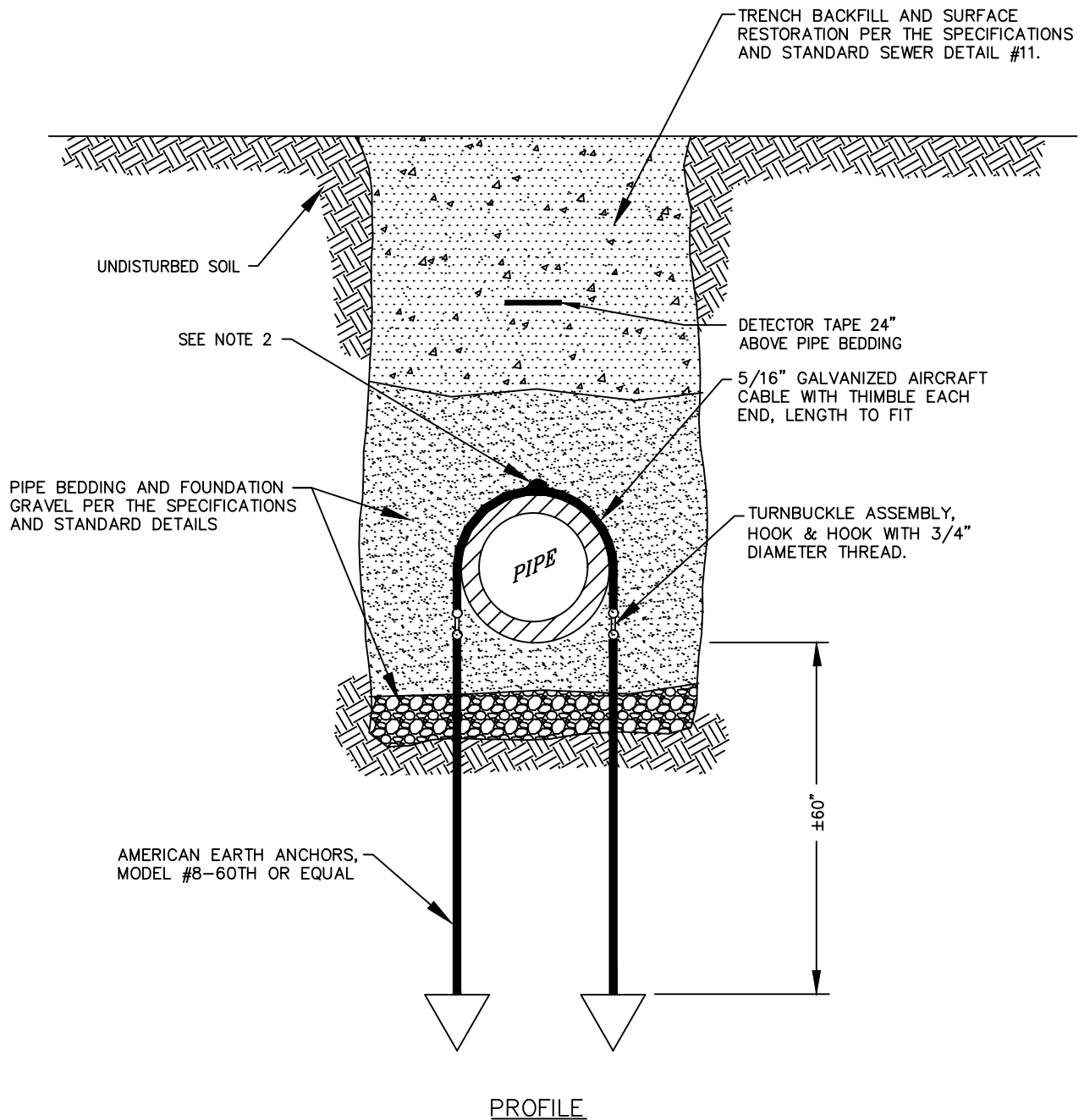
## NORTHSHORE UTILITY DISTRICT

### 2023 STANDARD SEWER DETAILS

**12**

LAST UPDATED  
JULY 2018





#### 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.

## PIPE ANCHOR

NOT TO SCALE

#### DETAIL APPROVALS

EDITOR TMC

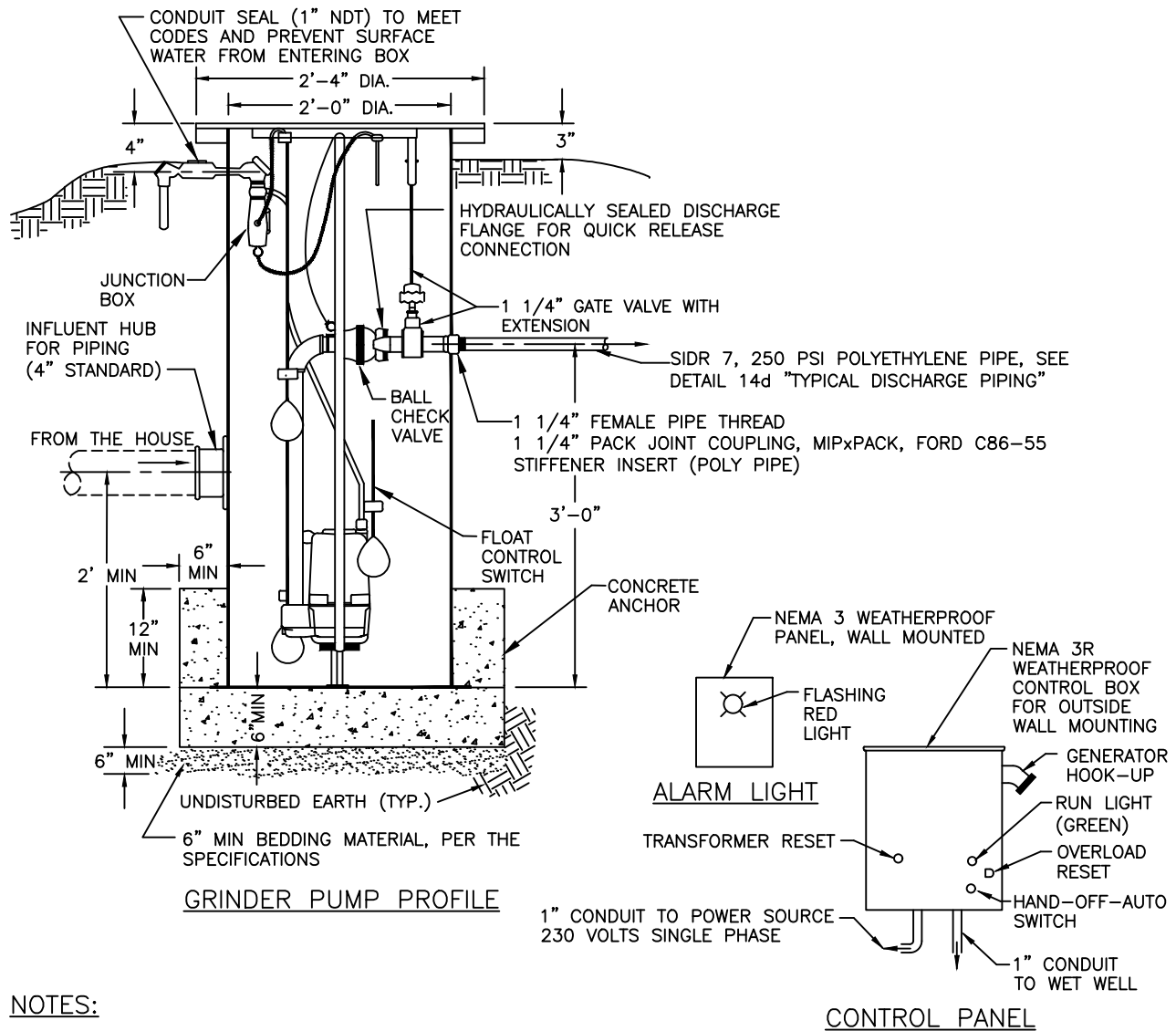
MANAGER SJD

## NORTHSHORE UTILITY DISTRICT

### 2023 STANDARD SEWER DETAILS

13

LAST UPDATED  
FEBRUARY 2020



## NOTES:

HYDRAMATIC HPG-200 COMPLETE PACKAGED SEWER GRINDER LIFT STATION (EQUAL TO THE TG-PRO SYSTEM) 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 SEWERS DIA.)
7. FIBERGLASS SUMP BASIN 24" I.D. x 5'-0" HIGH (PER BULLETIN SPG-604 (HYDRAMATIC OR EQUAL))
8. NEMA 3R LOCKING CONTROL PANEL WITH GENERATOR HOOK-UP, MOUNTED OUTSIDE ON HOUSE WALL
9. RED ALARM LIGHT PANEL, MOUNTED OUTSIDE ON HOUSE WALL
10. SEE ADDITIONAL INFORMATION PER STANDARD SEWER DETAIL 14d GENERAL NOTES

# SINGLE FAMILY GRINDER PUMP STATION HYDRAMATIC

NOT TO SCALE

DETAIL APPROVALS

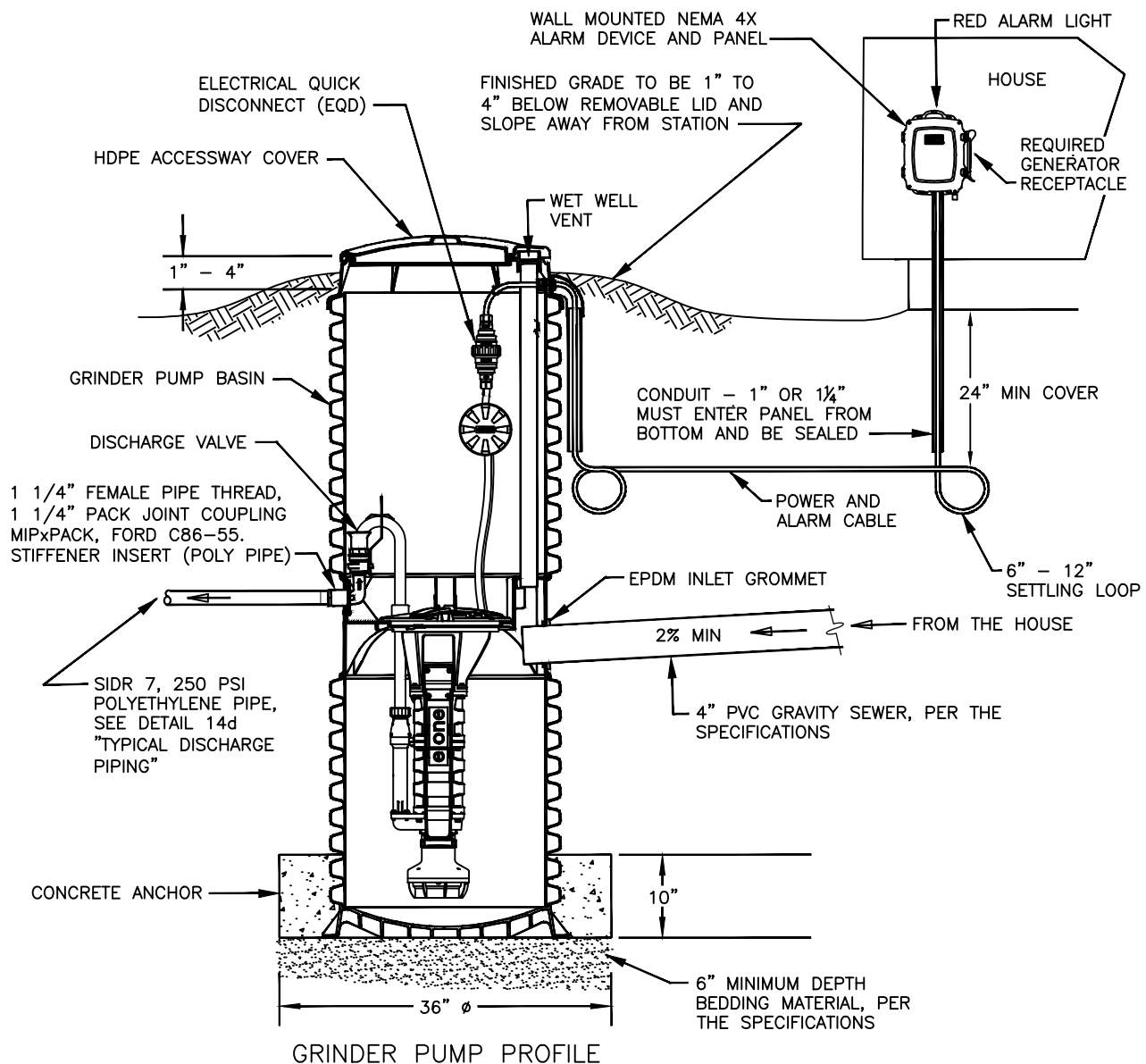
EDITOR TMC

MANAGER SJD

**NORTHSHORE UTILITY DISTRICT**  
2023 STANDARD SEWER DETAILS

**14a**

LAST UPDATED  
APRIL 2021



#### 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, 1 1/4" MIN)
5. INFLUENT PIPING SHALL PROVIDE INLET GROMMET FOR SDR 35 PVC PIPE (DIA. PER SIDESEWER DIA.)
6. ALARM PANEL, INCLUDING RED ALARM LIGHT AND GENERATOR RECEPTACLE, MOUNTED OUTSIDE ON HOUSE WALL
7. SEE ADDITIONAL INFORMATION PER STANDARD SEWER DETAIL 14d GENERAL NOTES

## SINGLE FAMILY GRINDER PUMP STATION E-ONE

NOT TO SCALE

#### DETAIL APPROVALS

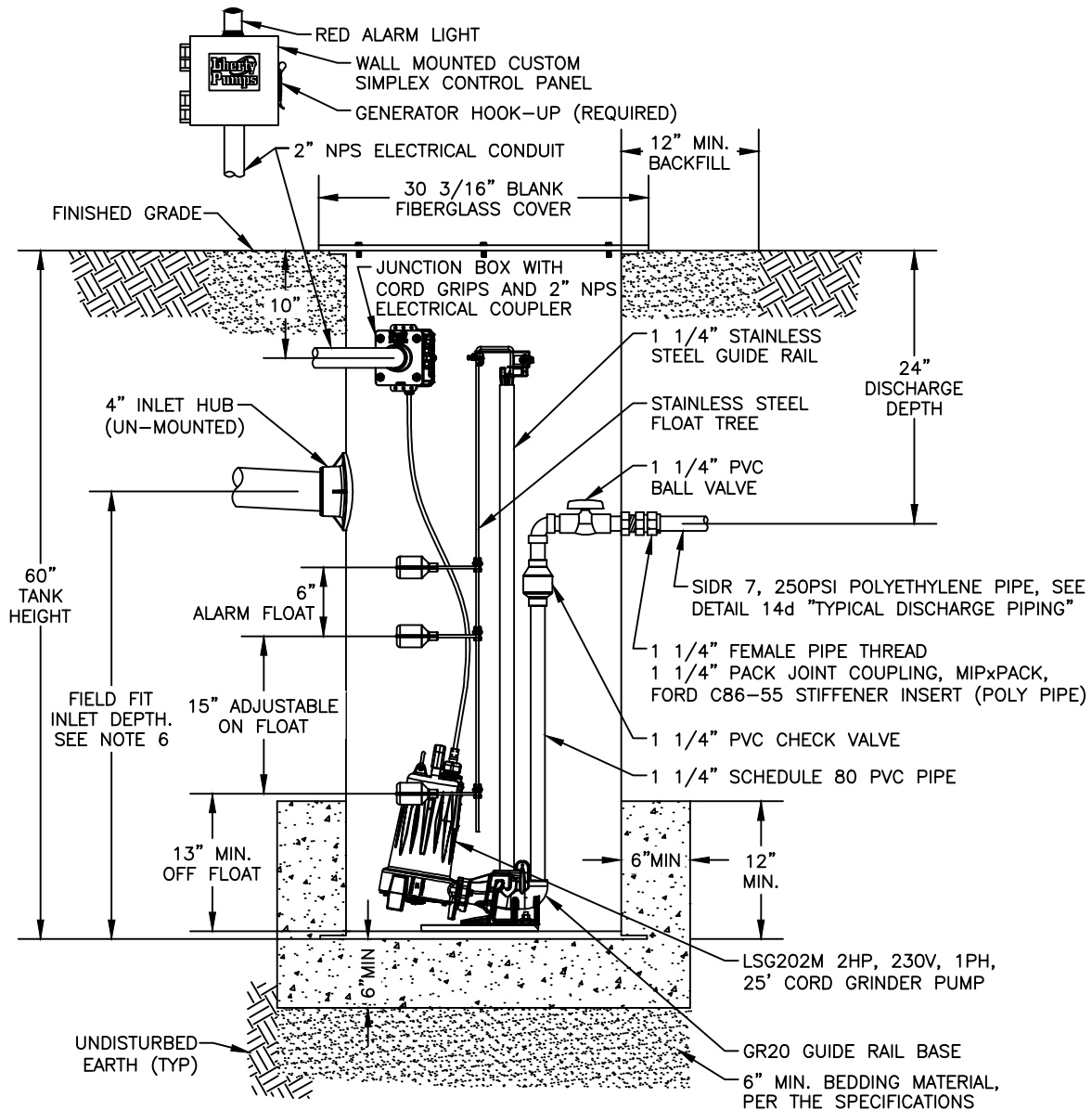
EDITOR TMC

MANAGER SJD

**NORTHSHORE UTILITY DISTRICT**  
2023 STANDARD SEWER DETAILS

**14b**

LAST UPDATED  
APRIL 2021



#### NOTES:

#### GRINDER PUMP PROFILE

LIBERTY PUMP EPS91174 COMPLETE PACKAGED SEWAGE GRINDER PUMP STATION TO INCLUDE THE FOLLOWING:

- 2HP LSG-SERIES GRINDER PUMP, 208-230V, SINGLE PHASE (ADEQUATE FOR SINGLE RESIDENCE, UP TO 108' TOTAL DYNAMIC HEAD).
- THREE FLOAT TYPE MECHANICAL PILOT DUTY SWITCHES TO CONTROL PUMP AND HIGH LEVEL ALARM.
- JUNCTION BOX AND 2" CONDUIT BULKHEAD.
- PVC DISCHARGE PIPING SHALL INCLUDE CHECK VALVE, BALL VALVE, AND 1 1/4" DISCHARGE BULKHEAD.
- FIBERGLASS TANK WITH ANTI-FLOTATION FLANGE. 24" ID x 60" HIGH.
- 4" INLET HUB, UN-MOUNTED TO BE INSTALLED AT CORRECT DEPTH IN FIELD PER MANUFACTURER'S RECOMMENDATIONS.
- SIMPLEX CONTROL PANEL, NEMA 4X ENCLOSURE, WITH GENERATOR RECEPTACLE. INCLUDES HIGH LEVEL ALARM AND TOP RED BEACON. ENCLOSURE MOUNTED OUTSIDE ON HOUSE WALL
- SEE ADDITIONAL INFORMATION PER STANDARD SEWER DETAIL 14d GENERAL NOTES

## SINGLE FAMILY GRINDER PUMP STATION

### LIBERTY PUMPS

NOT TO SCALE

#### DETAIL APPROVALS

EDITOR *TMC*

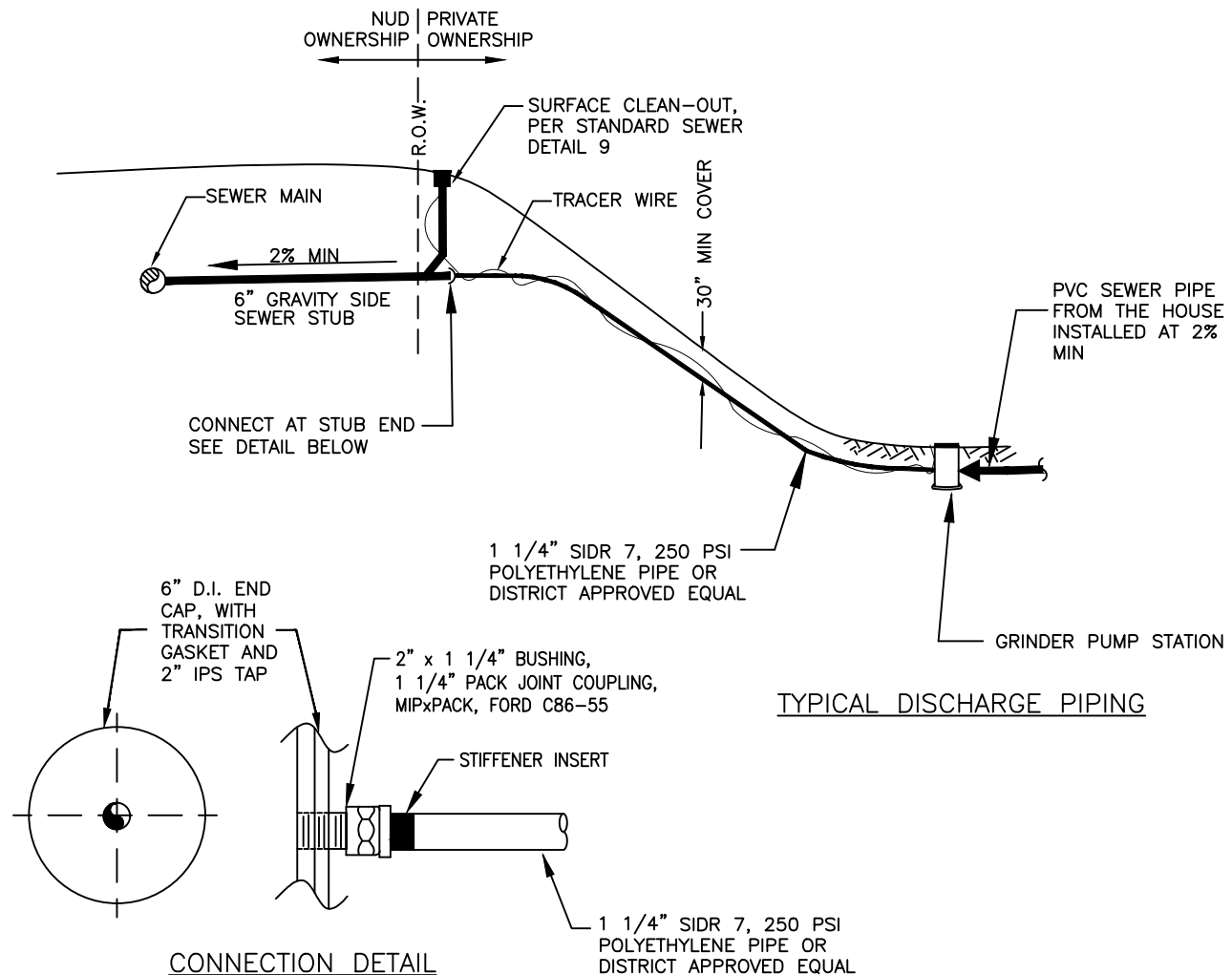
MANAGER *SJD*

**NORTHSHORE UTILITY DISTRICT**

2023 STANDARD SEWER DETAILS

**14c**

LAST UPDATED  
APRIL 2021



#### 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 E-ONE DH071, HYDRAMATIC HPG-200 OR LIBERTY PUMPS EPS91174, 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'-0" ABOVE PIPING WHEN POLY PRESSURE PIPE CROSSES OTHER PROPERTIES OR IS LOCATED ALONG COMMON ACCESS ROADS.
9. EVERY INSTALLATION SHALL BE EQUIPPED WITH AN ALARM PANEL, INCLUDING RED ALARM LIGHT AND GENERATOR RECEPTACLE, MOUNTED OUTSIDE ON HOUSE WALL.

## SINGLE FAMILY GRINDER PUMP STATION DISCHARGE PIPING/GENERAL NOTES

NOT TO SCALE

#### DETAIL APPROVALS

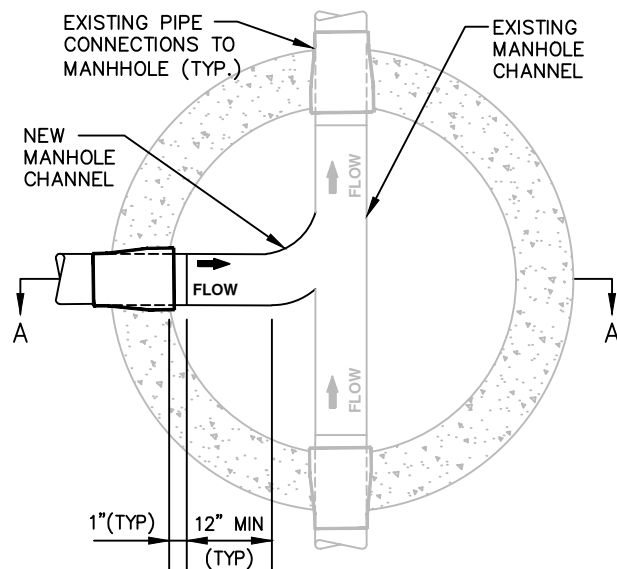
EDITOR *TMC*

MANAGER *SJD*

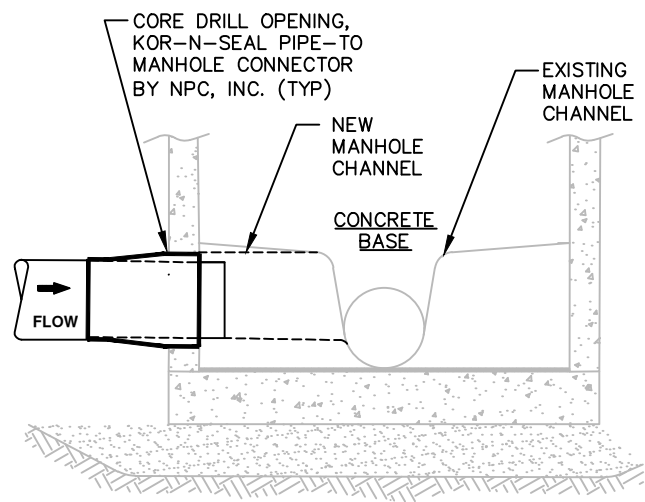
## NORTHSHORE UTILITY DISTRICT 2023 STANDARD SEWER DETAILS

14d

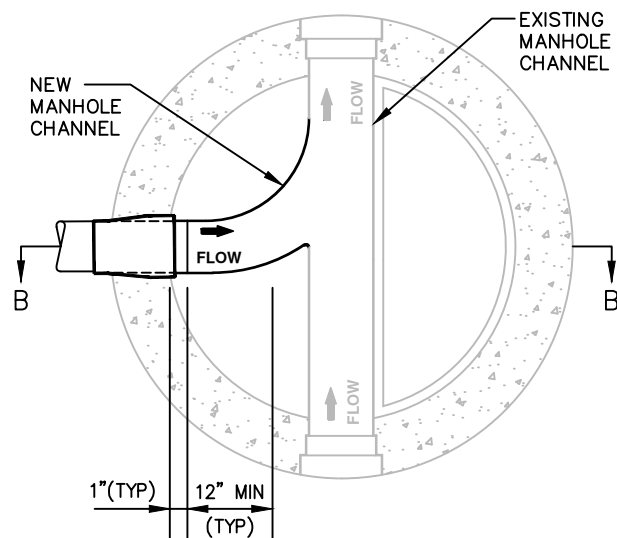
LAST UPDATED  
APRIL 2021



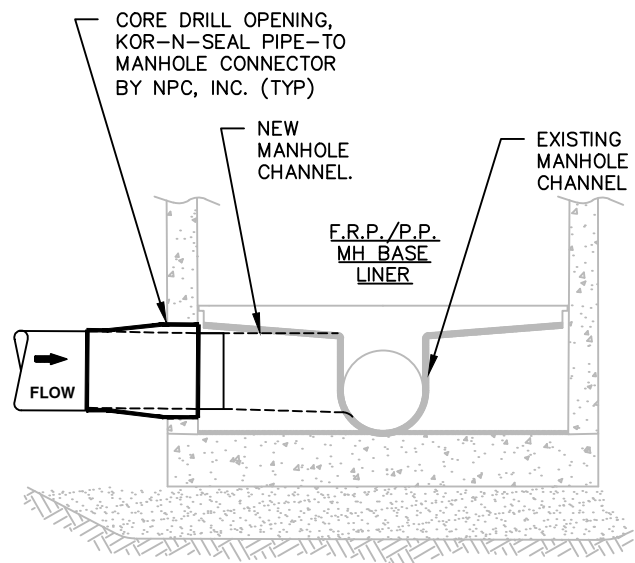
EXISTING CONCRETE BASE PLAN



SECTION A-A



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



SECTION B-B

**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-GLASSED PER MANUFACTURER'S SPECIFICATIONS. PLEASE CONTACT NORTHSORE UTILITY DISTRICT FOR REPAIR REQUIREMENTS.
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

**DETAIL APPROVALS**

ENGINEER *TMC*

MANAGER *SJD*

**NORTHSORE UTILITY DISTRICT**

2023 STANDARD SEWER DETAILS

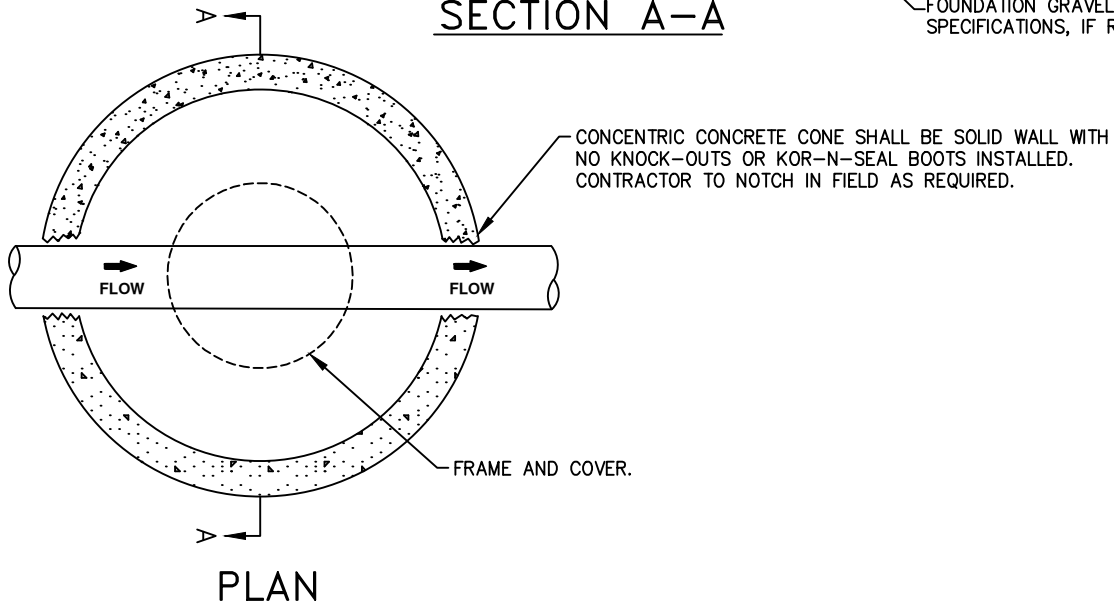
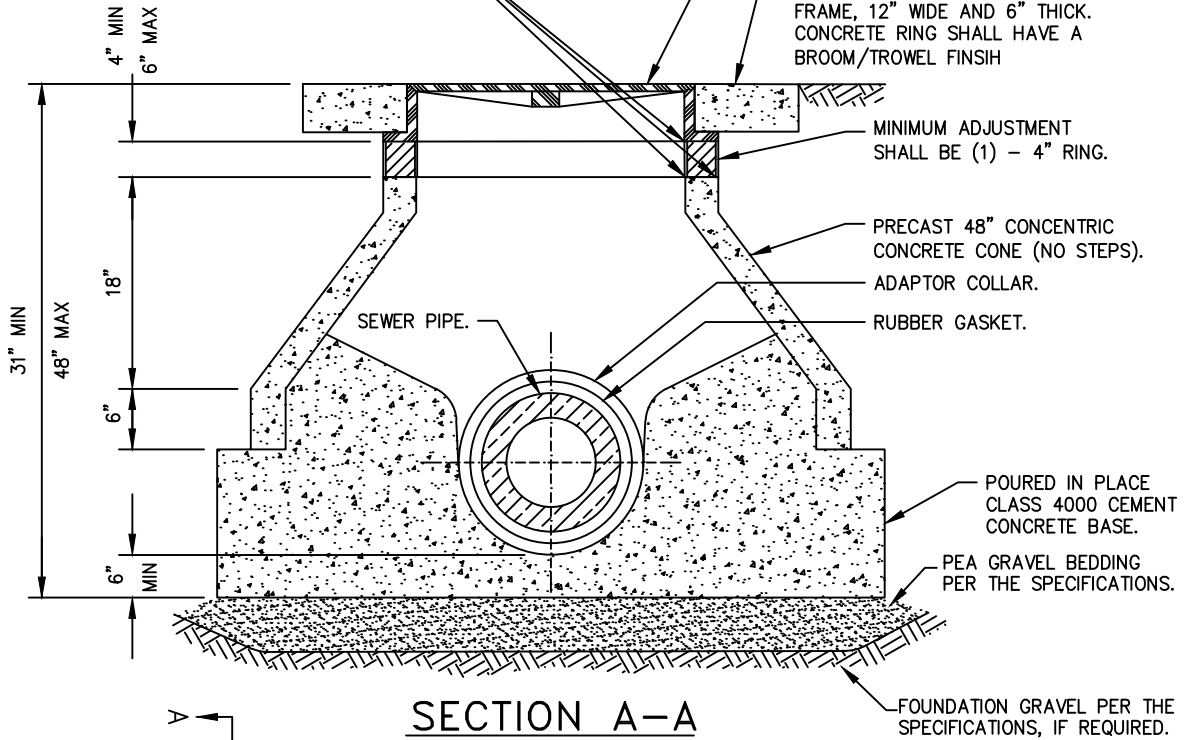
**15**

LAST UPDATED  
JANUARY 2023

GROUT ADJUSTING RINGS INSIDE, OUTSIDE AND BETWEEN. GROUT UNDER CASTING. INSIDE GROUT SHALL HAVE A SMOOTH BROOM FINISH.

MANHOLE FRAME AND COVER PER THE STANDARD SEWER DETAIL #5. LOCATE AS SHOWN ON PLAN.

IN UNPAVED AREAS, OR AS SHOWN ON THE PLANS, PROVIDE AN ASPHALT OR CONCRETE RING AROUND THE MANHOLE FRAME, 12" WIDE AND 6" THICK. CONCRETE RING SHALL HAVE A BROOM/TROWEL FINISH



#### NOTES:

1. APPLY RAVEN 405 EPOXY COATING, PER MANUFACTURER'S RECOMMENDATION, TO CHANNEL, SHELF, AND CONE SECTION. ENSURE INSIDE OF MANHOLE IS CLEAN AND DRY PRIOR TO COATING.
2. MARKER POSTS MAY BE REQUIRED IN EASEMENTS.
3. ALL PICK HOLES SHALL BE GROUTED ON THE INSIDE AND OUTSIDE OF MANHOLE.
4. MANHOLE LID SHALL BE ORIENTED PER THE DISTRICT'S DIRECTION.

## EXTRA SHALLOW SADDLE MANHOLE

NOT TO SCALE

#### DETAIL APPROVALS

EDITOR *TMC*

MANAGER *SJD*

## NORTHSHORE UTILITY DISTRICT

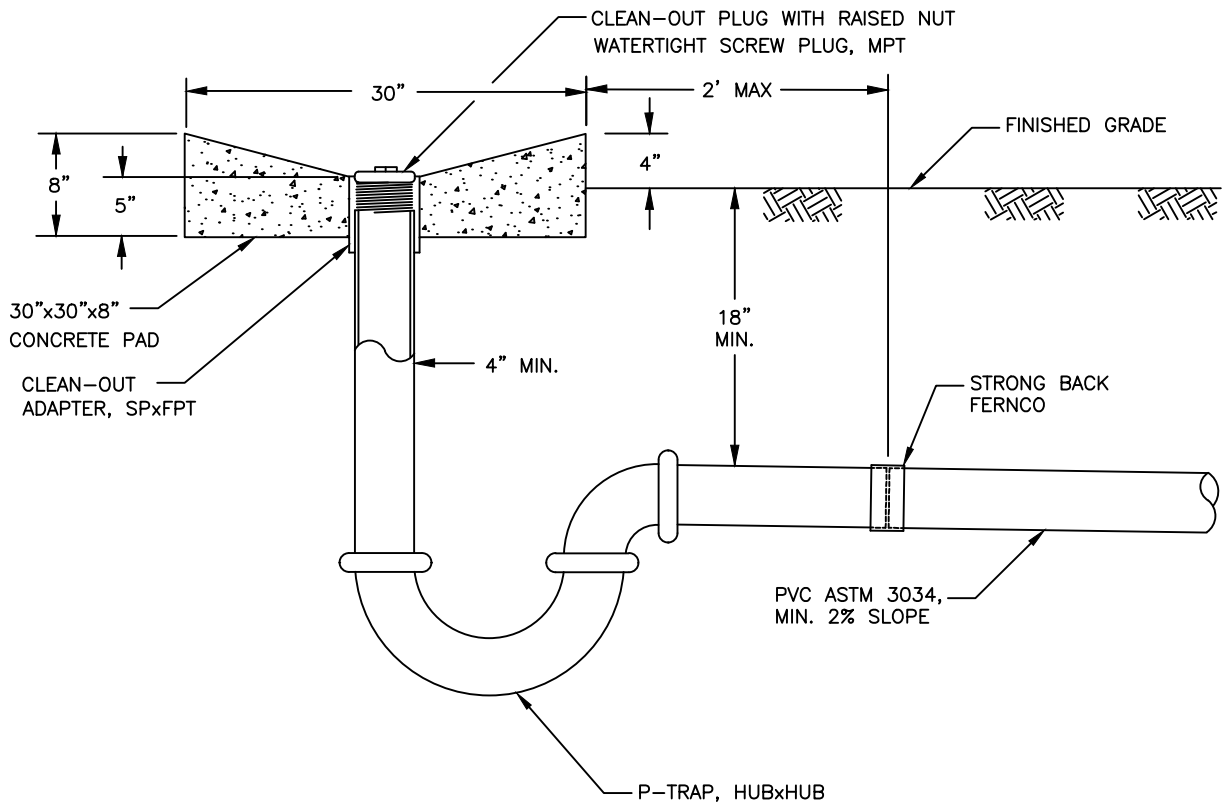
### 2023 STANDARD SEWER DETAILS

**16**

LAST UPDATED  
FEBRUARY 2020







PROFILE

NOTES:

1. TRAILER DUMP CONNECTION ONLY ALLOWED WHEN AUTHORIZED BY THE DISTRICT.
2. ALL PIPE SHALL BE ABS, SCHEDULE 40, SOLVENT WELD UNLESS OTHERWISE NOTED.
2. ALL FITTINGS SHALL BE ABS, HUBxHUB.
3. TRANSITION FROM ABS PIPE TO PVC PIPE SHALL BE MADE WITH A STRONG BACK FERNCO COUPLING ADAPTER.

**TRAILER DUMP**

NOT TO SCALE

**DETAIL APPROVALS**

**EDITOR** *TMC*

**MANAGER** *SJD*

**NORTHSHORE UTILITY DISTRICT**

**2023 STANDARD SEWER DETAILS**

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LAST UPDATED  
FEBRUARY 2020