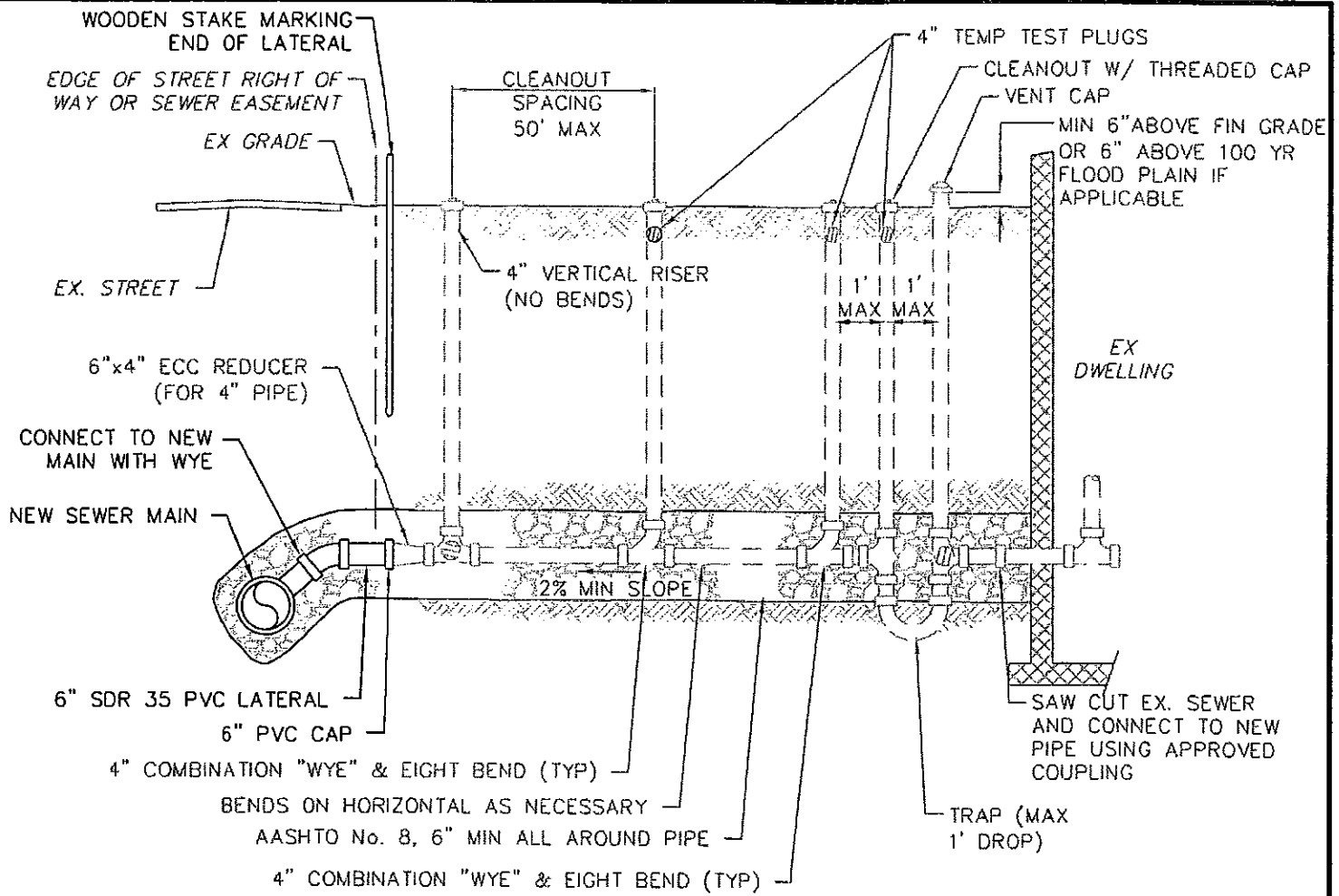


APPENDIX B - STANDARD DETAILS
STANDARD SEWER DETAILS

DETAIL NO.	DETAIL DESCRIPTION
FSWA-S1	BUILDING SEWER CONNECTION DETAIL (HOMEOWNERS RESPONSIBILITY)
FSWA-S2	LATERAL INSTALLATION DETAIL - EXISTING SEWER MAIN (CONTRACTORS RESPONSIBILITY)
FSWA-S3	LATERAL INSTALLATION DETAIL - NEW SEWER MAIN (CONTRACTORS RESPONSIBILITY)
FSWA-S4	LATERAL INSTALLATION DETAIL - DROP LATERAL
FSWA-S5	TYPICAL GRAVITY LATERAL AND BUILDING SEWER INSTALLATION SCHEMATIC
FSWA-S6	TYPICAL PACKAGE GRINDER STATION INSTALLATION SCHEMATIC
FSWA-S7	TYPICAL PACKAGE GRINDER STATION INSTALLATION DETAIL
FSWA-S8	PRECAST CONCRETE MANHOLE DETAIL - 8" TO 24" SEWERS
FSWA-S9	PRECAST MANHOLE BASE AND TYPICAL FLOW CHANNEL DETAILS
FSWA-S10	GRAVITY SEWER TO EXISTING MANHOLE INSTALLATION DETAIL
FSWA-S11	INSIDE SPLASH TO EXISTING MANHOLE INSTALLATION DETAIL
FSWA-S12	INSIDE DROP TO EXISTING MANHOLE INSTALLATION DETAIL
FSWA-S13	OUTSIDE PRECAST DROP MANHOLE INSTALLATION DETAIL
FSWA-S14	STANDARD MANHOLE FRAME AND COVER DETAIL
FSWA-S15	WATER-TIGHT MANHOLE FRAME AND COVER DETAIL
FSWA-S16	MANHOLE FRAME AND COVER WITH CONCRETE GRADE RING(S) INSTALLATION DETAIL
FSWA-S17	MANHOLE FRAME AND COVER WITH POURED IN PLACE GRADE ADJUSTMENT INSTALLATION DETAIL
FSWA-S18	SELF SEALING MANHOLE COVER DETAIL
FSWA-S19	GRAVITY SEWER UTILITY CROSSING DETAIL
FSWA-S20	LOW PRESSURE SERVICE LINE CONNECTION DETAIL
FSWA-S21	LOW PRESSURE TERMINAL CLEANOUT DETAIL
FSWA-S22	AIR RELEASE VALVE MANHOLE INSTALLATION DETAIL
FSWA-S23	FORCE MAIN INLINE CLEANOUT INSTALLATION DETAIL
FSWA-S24	OUTFALL ENDWALL DETAIL
FSWA-S25	SEWER MAIN STREAM CROSSING DETAIL
FSWA-S26	PACKAGE GRINDER STATION CONNECTION TO A PRESSURE MAIN SCHEMATIC
FSWA-S27	PACKAGE GRINDER STATION CONNECTION TO A PRESSURE MAIN DETAIL
FSWA-S101	LATERAL INSTALLATION DETAIL - LATERAL INTO EXISTING MANHOLE
FSWA-S102	LATERAL INSTALLATION DETAIL - INSIDE SPLASH/DROP INTO EXISTING MANHOLE
FSWA-S103	VENT, TRAP AND CLEANOUT INSTALLATION DETAIL
FSWA-S104	LATERAL CLEANOUT INSTALLATION DETAIL - PAVED AREAS

DETAIL: FSWA - S2



NOTES:

1 PROVIDE 6" OF AASHTO NO. 8 (1B) STONE
BELOW PIPE AND 12" ABOVE PIPE
(TYPICAL ENTIRE LENGTH OF LATERAL)

2 MINIMUM SLOPE 2% (1/4" PER FT) SLOPES
DOWN TO 1% (1/8" PER FT WITH APPROVAL
OF FSWA

3 MINIMUM DEPTH OF COVER = 3 FT

4 PIPE MATERIALS:

SERVICE LINE - PVC SDR 35 (TRAP TO BE
SCH 40 GLUE JOINTS WITH
FLEXIBLE PIPE COUPLINGS
CONNECTING TO SDR 35 PIPE
ON BOTH SIDES

- PVC SCH 40 OR 80

5 THE LATERAL SEWER SHALL BE INSTALLED TO THE
EDGE OF THE SEWER EASEMENT FOR SEWERS LOCATED
IN AN EASEMENT OR TO THE STREET RIGHT-OF-WAY AS
A MINIMUM OR TO SUCH POINT, AS REQUIRED, TO CLEAR
STREETS, SIDEWALKS AND UNDERGROUND UTILITIES.

6 CONTRACTOR TO PLUG THE END OF LATERAL AT R.O.W.
LINE FOR AIR TESTING.

STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

NEW SEWER MAIN - LATERAL DETAIL

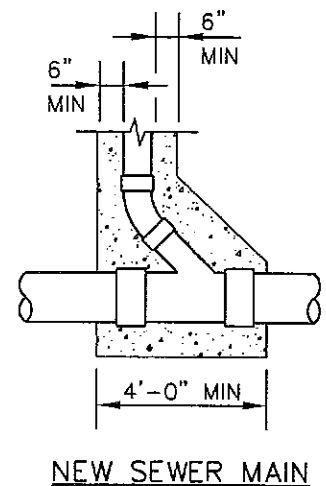
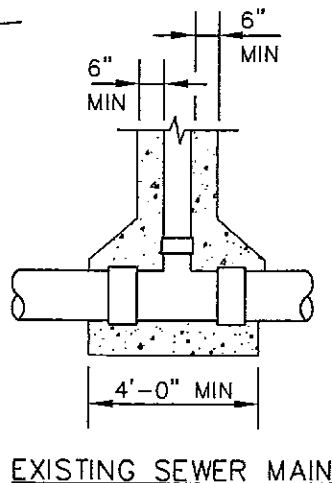
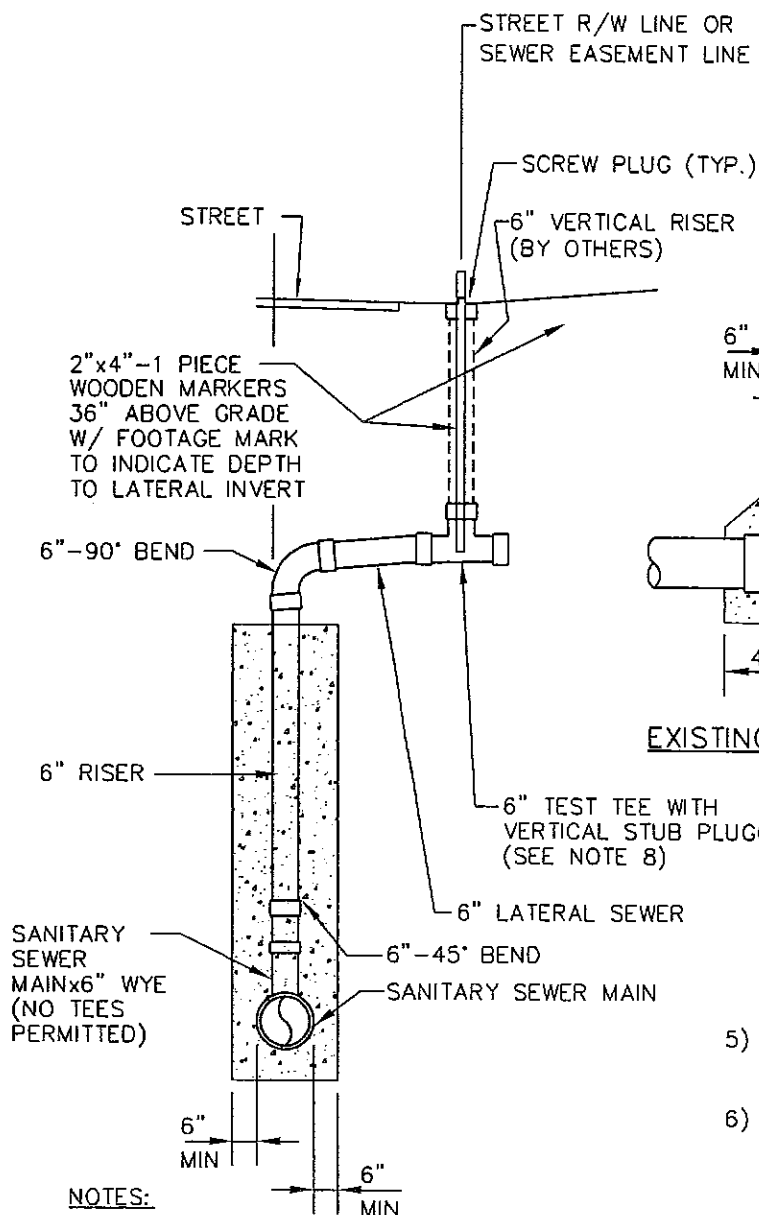
(CONTRACTOR'S RESPONSIBILITY)



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DETAIL: FSWA - S3



NOTES:

- 1) PROVIDE 6" OF AASHTO NO. 8 (1B) STONE BELOW PIPE AND 12" ABOVE PIPE (TYPICAL ENTIRE LENGTH OF LATERAL).
- 2) MINIMUM SLOPE = 1% (1/8" PER FT.)
- 3) MINIMUM DEPTH OF COVER = 3 FT
- 4) 6" TEST TEE SHALL BE POSITIONED SO THAT THE RISER IS LOCATED IN GRASSED AREAS, NOT IN SIDEWALKS OR PAVED AREAS.

5) DEVELOPER SHALL TEST AGAINST 6" TEST STUB AND PLUG.

6) PIPE MATERIALS:
LATERAL SEWER - PVC SDR 35
- DUCTILE IRON

7) DEVELOPER SHALL INSTALL THE LATERAL SEWER TO THE EDGE OF THE SEWER EASEMENT FOR SEWERS LOCATED IN AN EASEMENT OR TO THE STREET RIGHT-OF-WAY AS A MINIMUM, OR TO SUCH POINT, AS REQUIRED, TO CLEAR STREET SIDEWALKS AND UNDERGROUND UTILITIES.

8) SET TEST TEE AT 1% SLOPE TO PERMIT VERTICAL RISER INSTALLATION W/ NO BENDS

STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

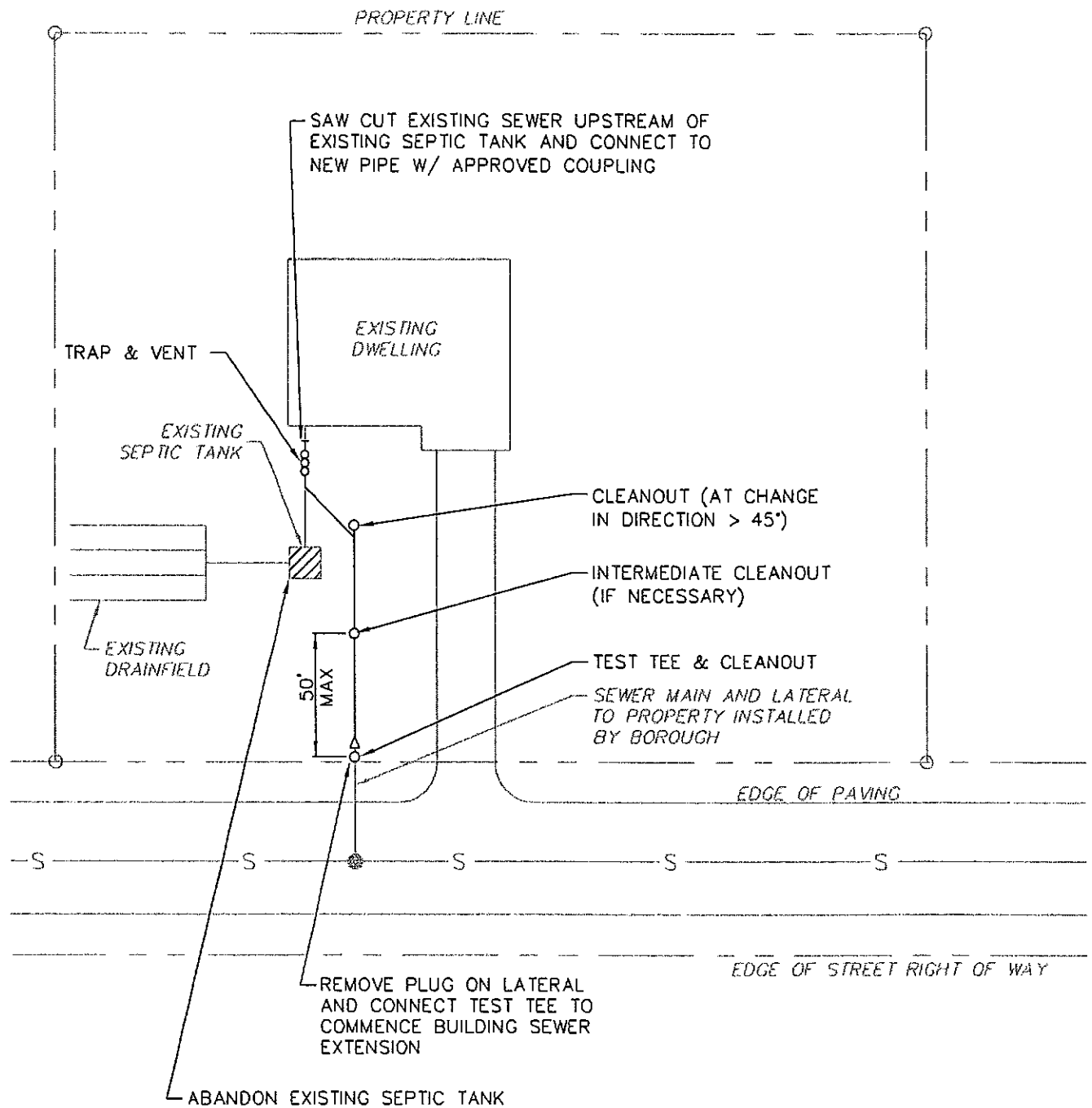
DROP LATERAL SEWER INSTALLATION



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DETAIL: FSWA - 54



STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

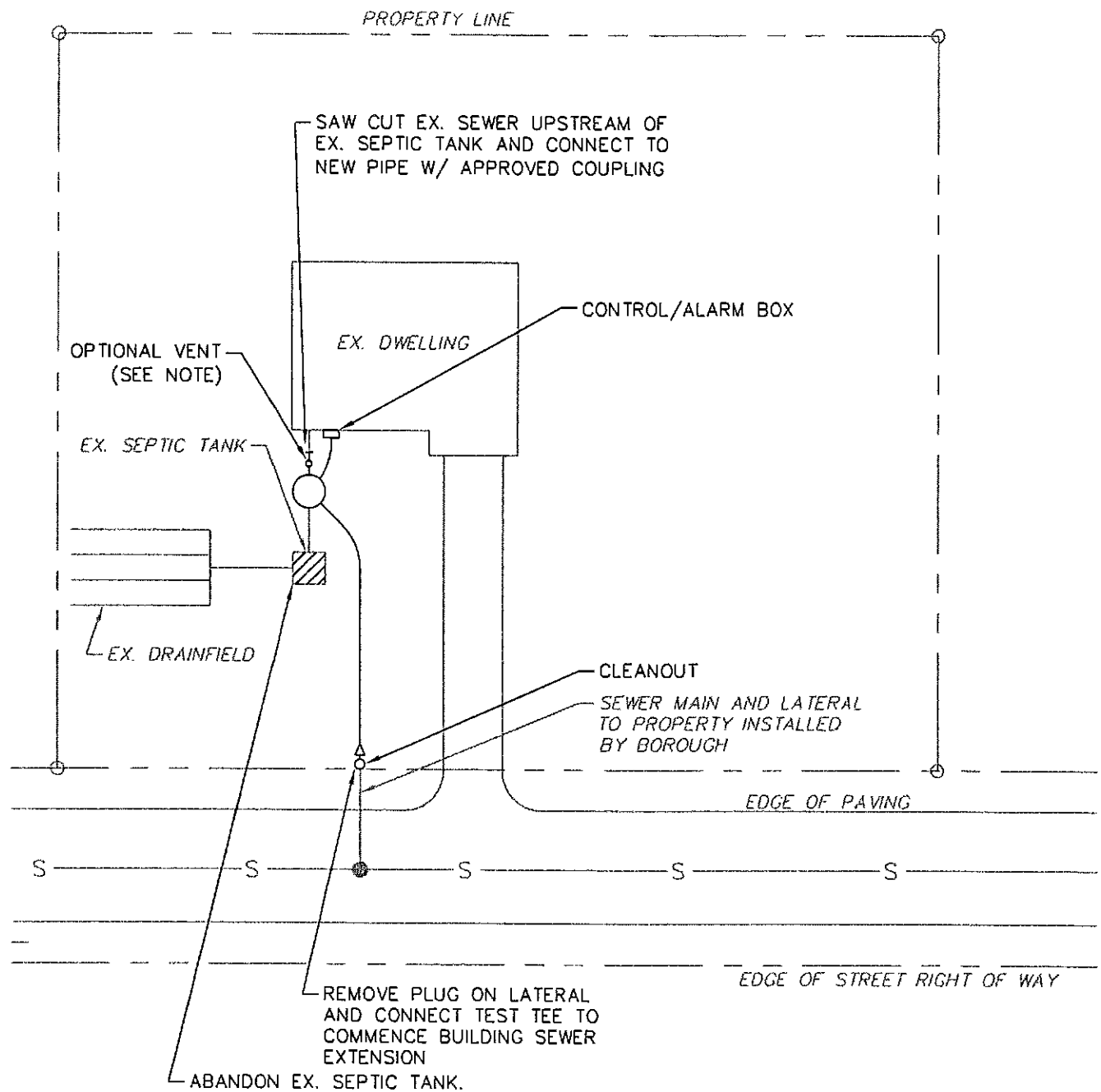
TYPICAL GRAVITY LATERAL AND BUILDING SEWER INSTALLATION SCHEMATIC



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DETAIL: FSWA - 55



NOTE: THE OPTIONAL VENT MAY BE NECESSARY IF THE BUILDING PLUMBING IS NOT PROPERLY VENTED. OWNER SHOULD CONSULT THEIR PLUMBER.

STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

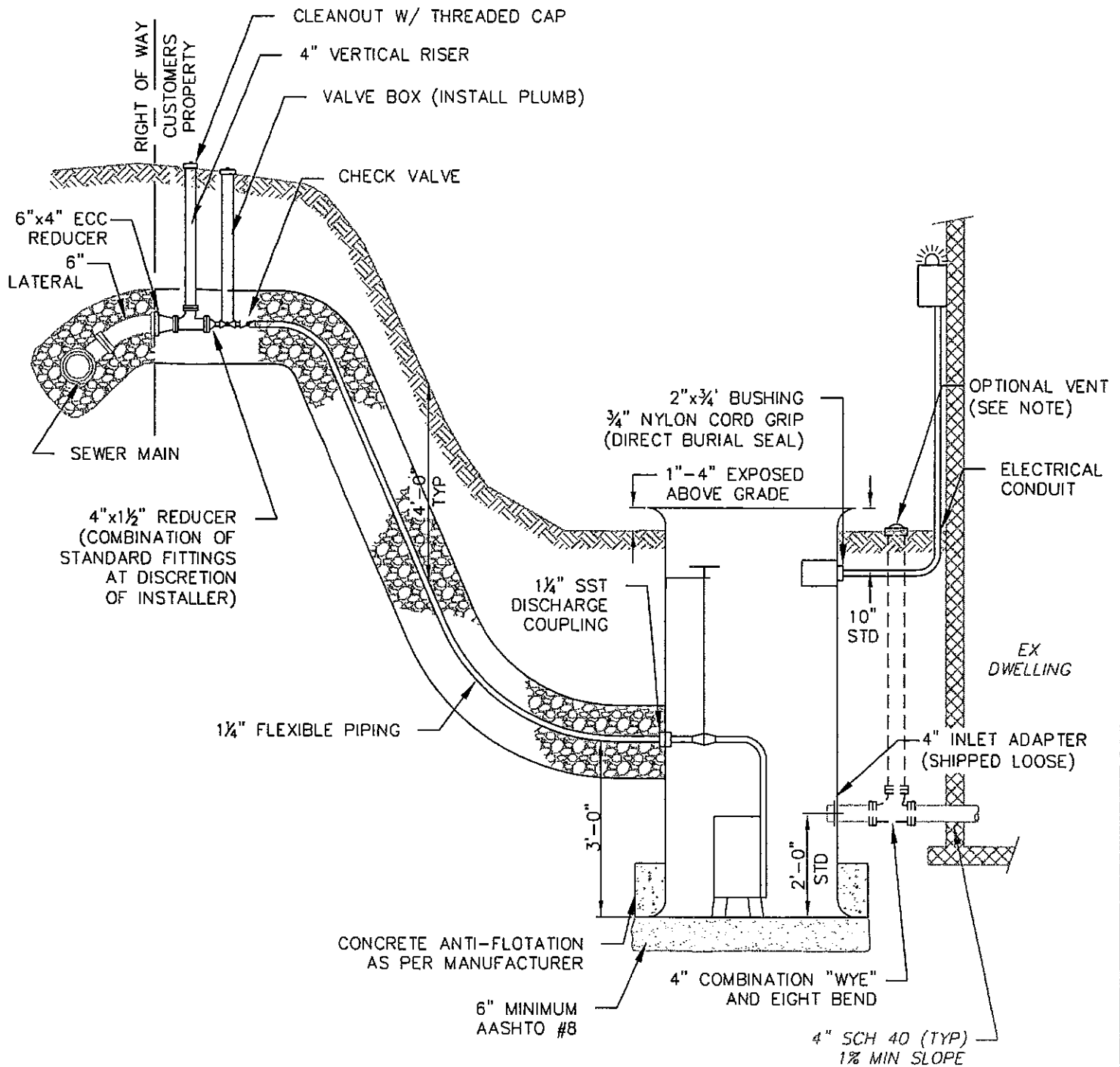
TYPICAL PACKAGE GRINDER STATION SERVICE LINE INSTALLATION SCHEMATIC



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DATE: OCTOBER 2008

DETAIL: FSWA - S6



NOTE: THE OPTIONAL VENT MAY BE NECESSARY IF THE BUILDING PLUMBING IS NOT PROPERLY VENTED. OWNER SHOULD CONSULT THEIR PLUMBER.

STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

TYPICAL PACKAGE GRINDER STATION INSTALLATION DETAIL



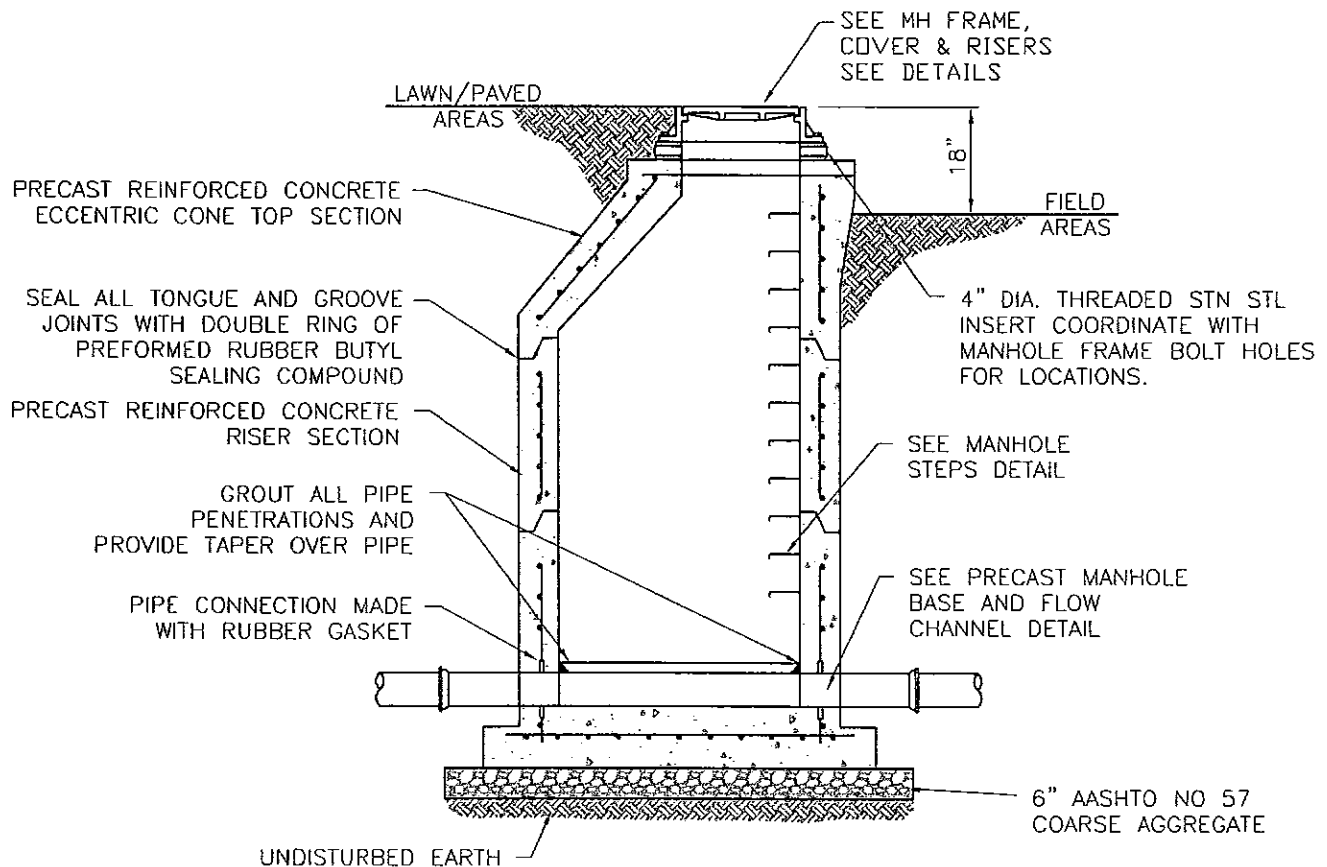
STECKBECK ENGINEERING & SURVING INC
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LEBANON, PA 17042
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DATE: OCTOBER 2008

DETAIL: FSWA - S7

NOTES

1. PRECAST CONCRETE SHALL CONFORM TO ASTM C478. CONCRETE SHALL BE MECHANICALLY VIBRATED. FOR ADDITIONAL DETAILS SEE NLMA STANDARD CONSTRUCTION AND MATERIAL SPECIFICATIONS FOR SANITARY SEWER EXTENSIONS.
2. ADJUST TO GRADE ACCORDING TO DETAIL. MAXIMUM GRADE RING ADJUSTMENT SHALL BE 6". SEE MANHOLE FRAME AND COVER DETAILS FOR GRADE RING DETAILS.
3. USE FLAT TOPS IN LIEU OF CONE TOPS WHERE MANHOLE DEPTH (TOP OF RIM TO INVERT) IS 5'-0" OR LESS.
4. FILL ALL LIFTING HOLES WITH NON SHRINK GROUT PRIOR TO BACKFILLING.
5. PROVIDE MANHOLE INSERTS FOR ALL MANHOLES. SEE MANHOLE FRAME AND COVER DETAILS FOR ADDITIONAL DETAILS.
6. ALL MANHOLE FRAMES SHALL BE BOLTED TO MANHOLE. SEE MANHOLE FRAME AND COVER DETAILS FOR ADDITIONAL DETAILS.



PRECAST CONCRETE MANHOLE
8"-24" SEWERS
NOT TO SCALE

STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

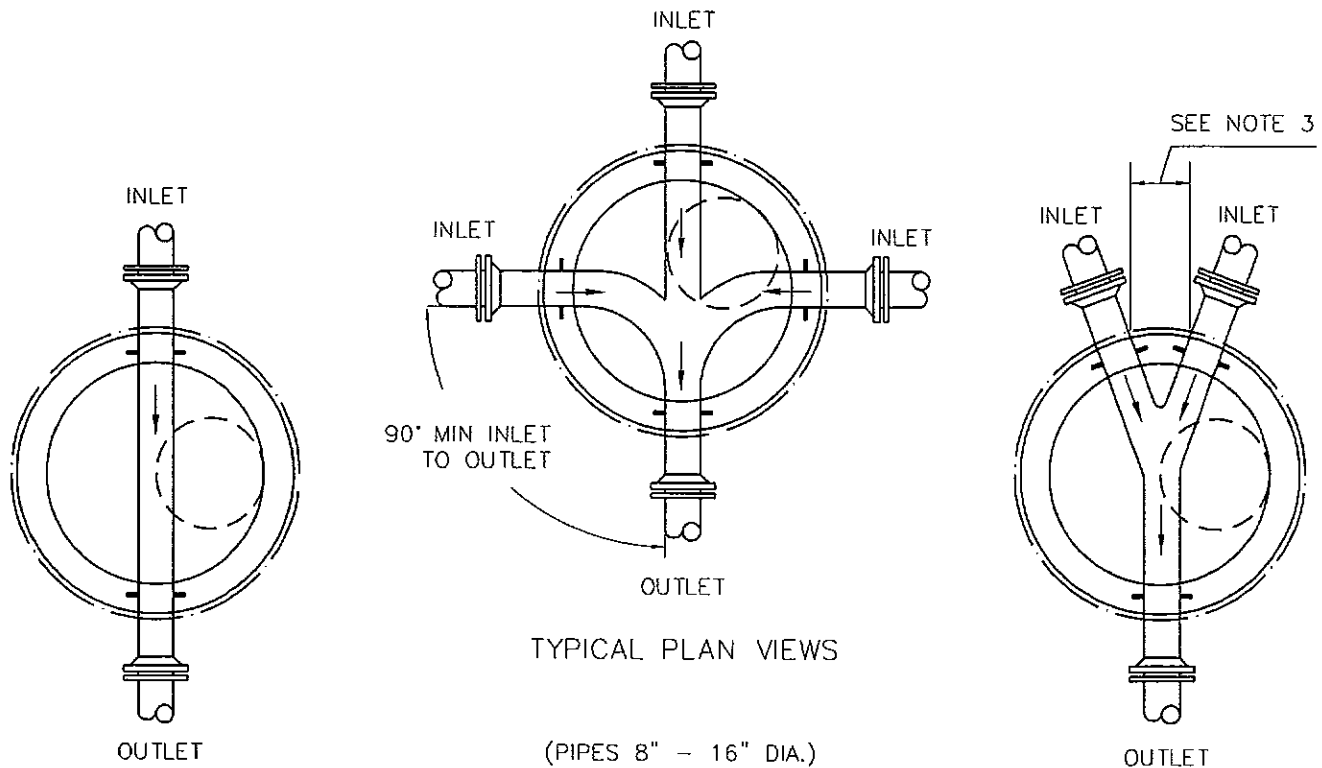
PRECAST CONCRETE MANHOLE DETAIL
8"-24" SEWERS

SESI

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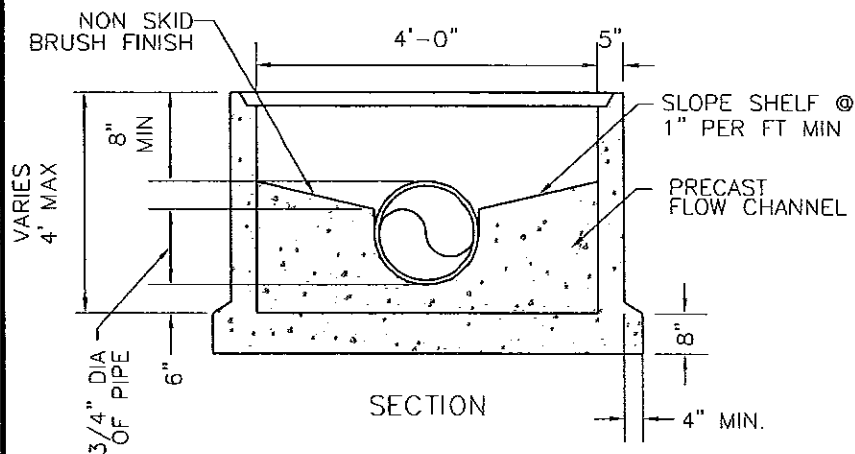
DATE: OCTOBER 2008

DETAIL: FSWA - 58



NOTES

1. THREE INLET PIPES AND ONE OUTLET PIPE MAX INTO 4' DIA. MANHOLE.
2. NO LATERALS INTO MANHOLES, EXCEPT BY SPECIAL EXCEPTION FROM NLMA.
3. MINIMUM 12" SEPARATION FROM EDGE OF PIPE PENETRATION TO EDGE OF PIPE PENETRATION.
4. MINIMUM CHANNEL DROP THROUGH MANHOLE:
STRAIGHT THROUGH - 0.1 FEET
BEND - 0.2 FEET
5. ALL CHANNELS SHALL BE PRECAST, UNLESS APPROVED OTHERWISE BY THE NLMA.
6. THESE DETAILS APPLY TO PRECAST CHANNELS IN NEW MANHOLES, AND FIELD-FORMED CHANNELS IN EXISTING MANHOLES.
7. CHANNELS SHALL MATCH THE CROSS-SECTIONAL DIMENSIONS OF THE PIPES ENTERING AND EXITING THE MANHOLE. SMOOTH TRANSITIONS SHALL BE PROVIDED BETWEEN CHANGES IN PIPE SIZE.



STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

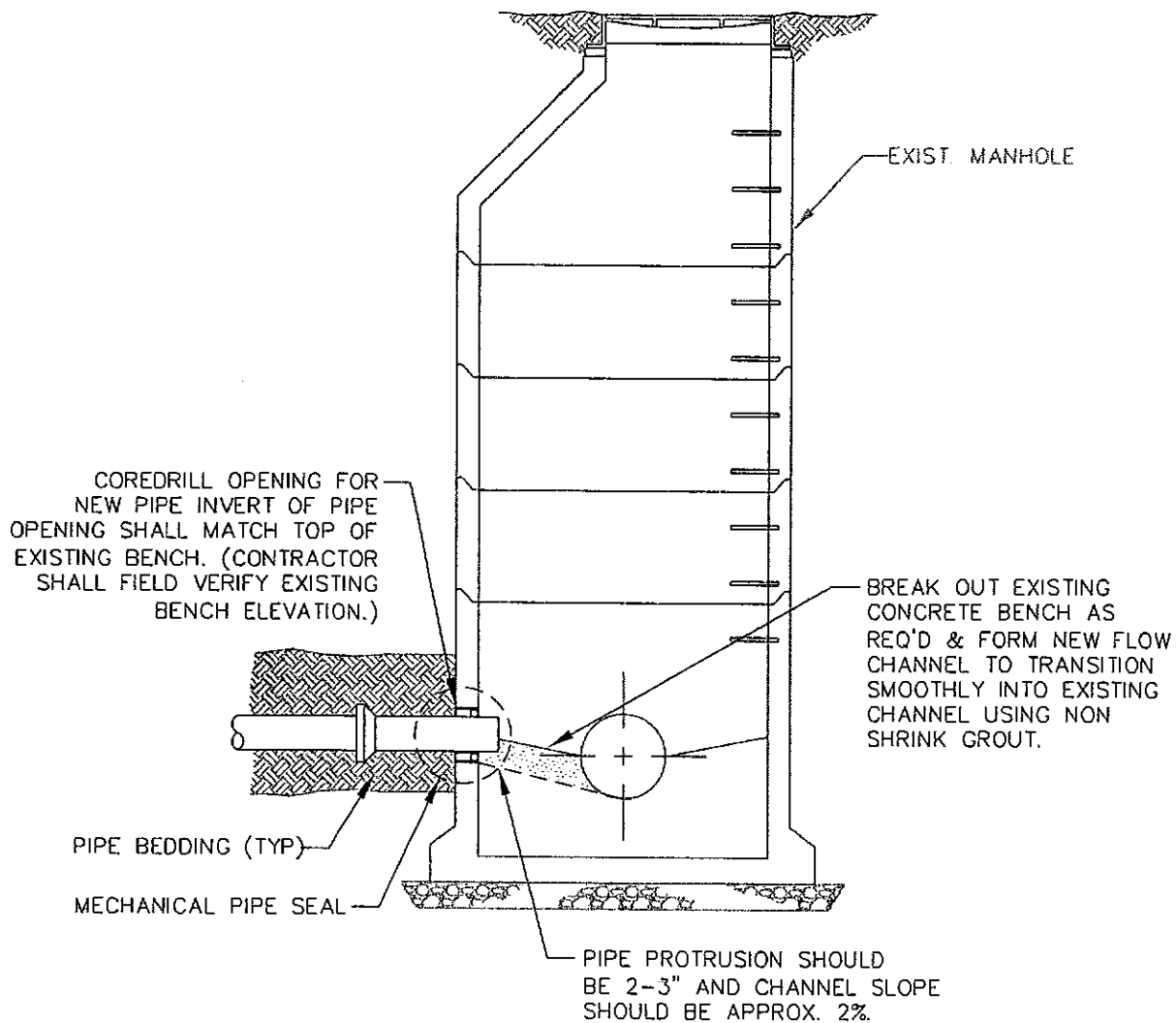
TYPICAL PRECAST MANHOLE BASE &
FLOW CHANNEL DETAILS



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DETAIL: FSWA - 59



STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

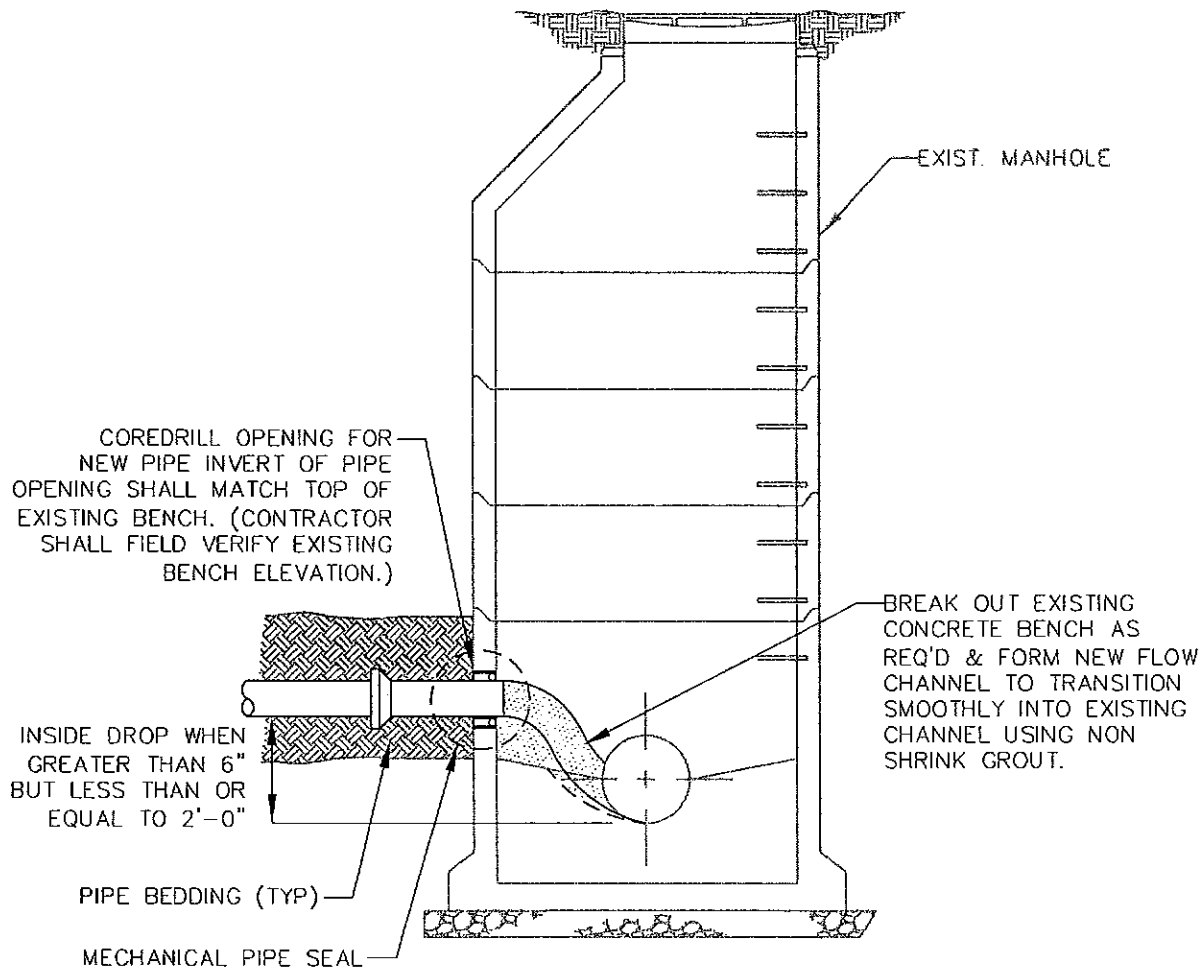
GRAVITY SEWER TO EXISTING MANHOLE INSTALLATION DETAIL



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DETAIL: FSWA - 510



STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

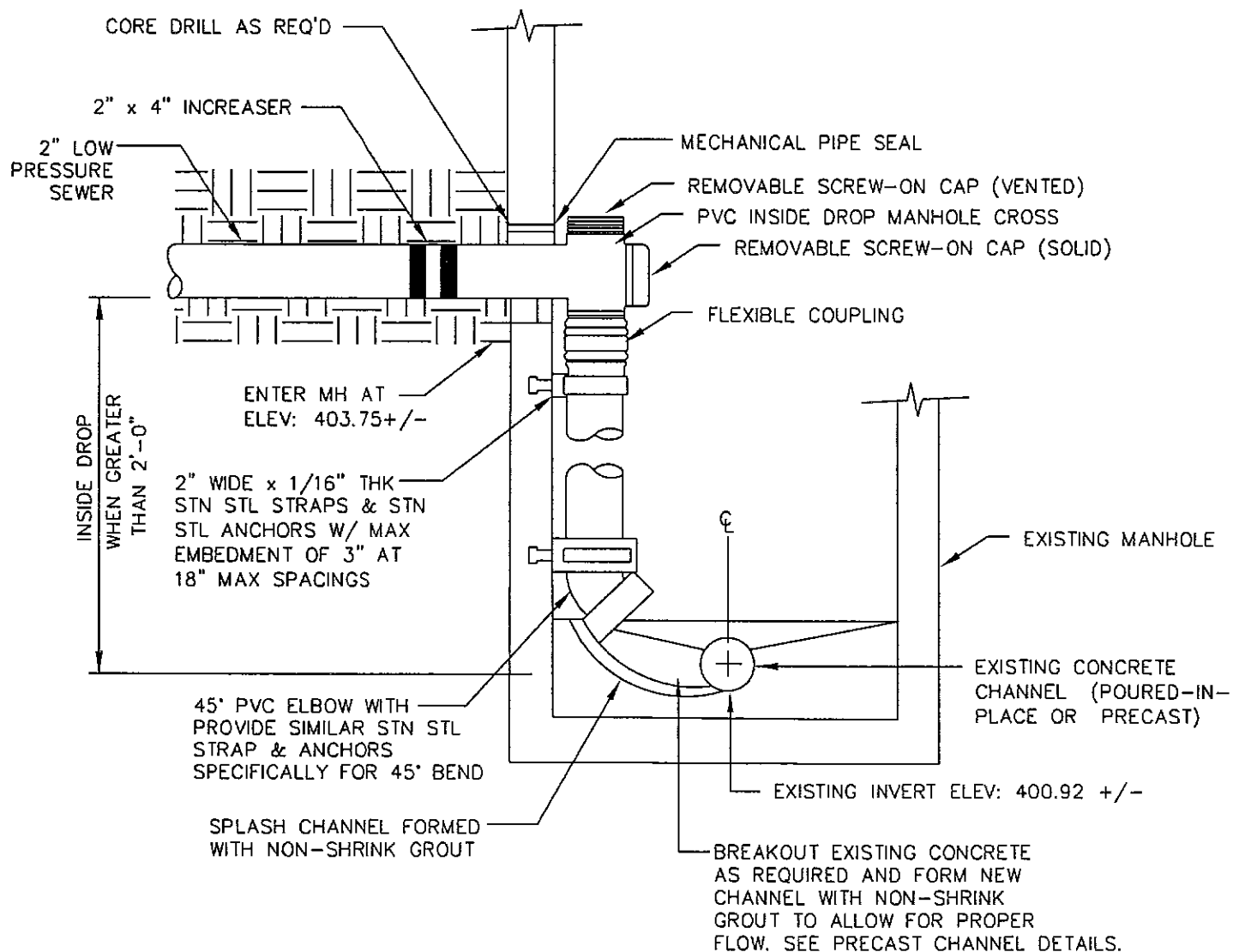
INSIDE SPLASH TO EXISTING MANHOLE INSTALLATION DETAIL



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DETAIL: FSWA - S11



INSIDE DROP MANHOLE

NOT TO SCALE

STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

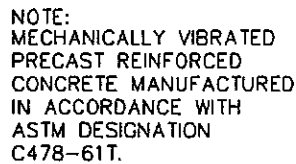
INSIDE DROP TO EXISTING MANHOLE
INSTALLATION DETAIL

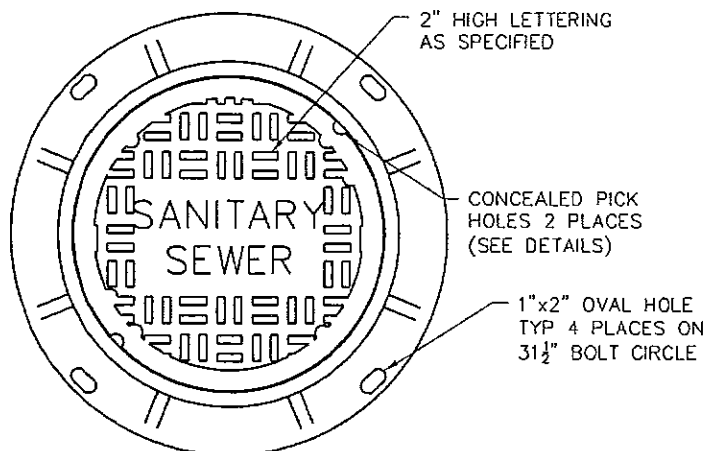
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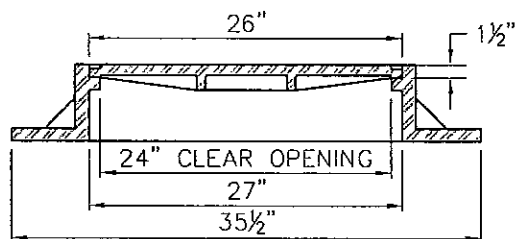
DATE: OCTOBER 2008

DETAIL: FSWA - S12

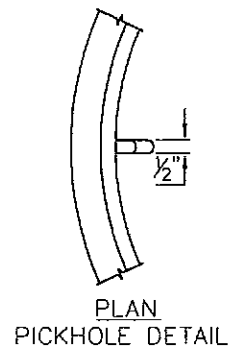




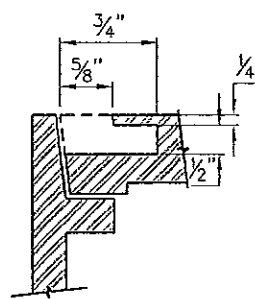
PLAN--COVER PATTERN



CROSS SECTION--COVER PATTERN



PLAN
PICKHOLE DETAIL



SECTION
PICKHOLE DETAIL

NOTES:

- 1 CAST IRON MEETS ASTM SPEC A-48-76 CLASS 30, AASHTO HIGHWAY LOADING HS-20
- 2 APPROVED MANUFACTURER: WASHINGTON CASTINGS MODEL WSC 726-NL (CONTACT NLTMA PRIOR TO COMMENCING CONSTRUCTION TO RECEIVE UPDATED LIST OF APPROVED MANUFACTURER.)

STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

STANDARD MANHOLE FRAME & COVER DETAIL



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DETAIL: FSWA - S14

DETAIL: FSWA - S15

HEAVY DUTY CAST IRON
FRAME AND COVER SUIT-
ABLE FOR HS25 LOADING
(NEENAH 1683, SELF
SEALING MODEL OR EQUAL)

2" RAISED LETTER *
(TYP)

CONCEALED PICK HOLE
(2 REQD)

SEWER

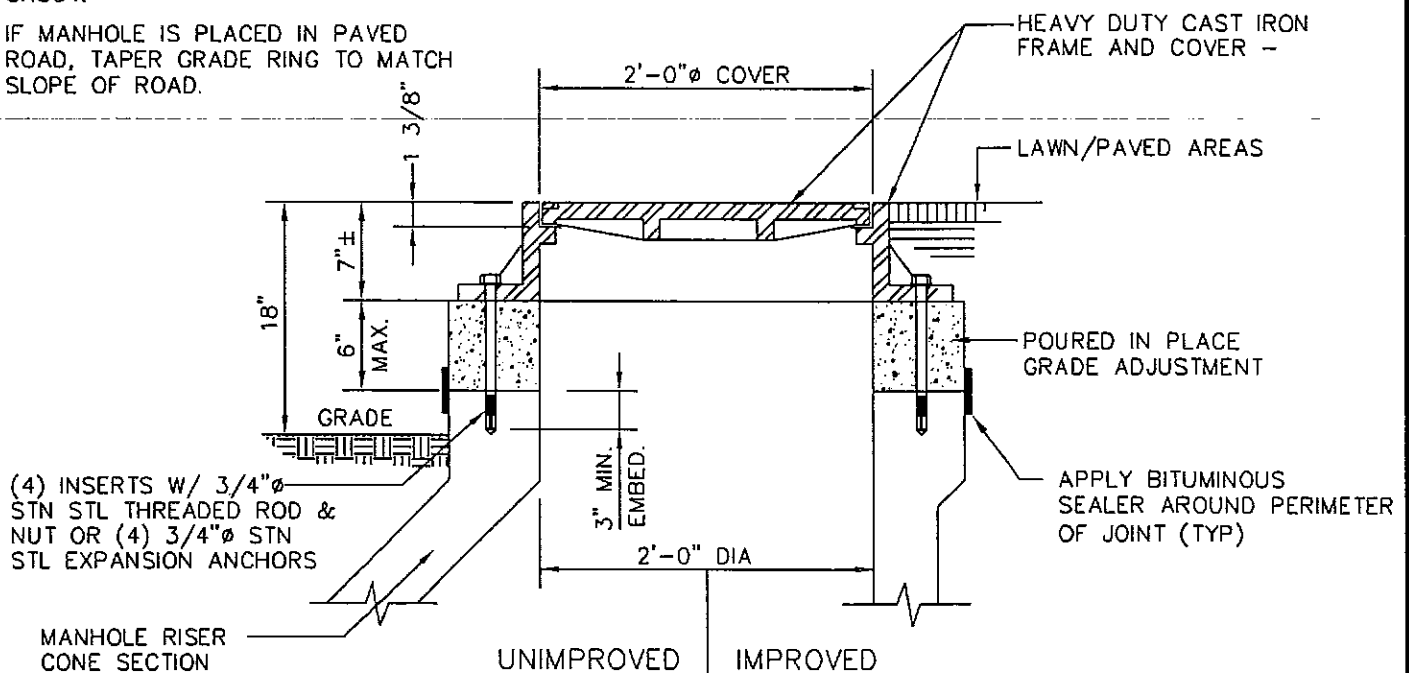
(4) 7/8"Ø BOLT HOLES

GUSSETS (MIN 6 REQD)

NOTES:

- 1.) ANCHOR BOLT HOLES SHALL BE DRILLED WITH A PERCUSSION OR ROTARY HAMMER DRILL UTILIZING A CARBIDE DRILL BIT. CORE DRILLING, OR ROTATIONAL ONLY DRILLING, OF ANY KIND, IS NOT ALLOWED.
- 2.) FRAME ANCHORS SHALL BE TIGHTENED PRIOR TO CURING OF NON-SHRINK GROUT.
- 3.) IF MANHOLE IS PLACED IN PAVED ROAD, TAPER GRADE RING TO MATCH SLOPE OF ROAD.

COVER PATTERN



STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

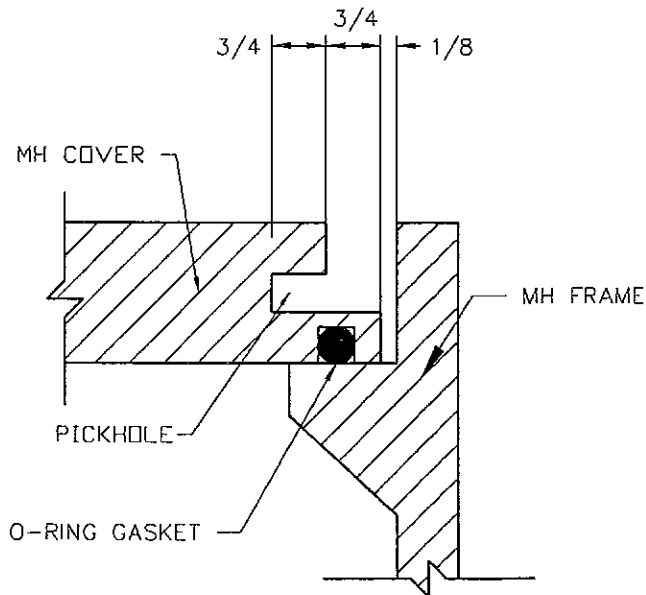
MANHOLE FRAME & COVER
WITH POURED IN PLACE GRADE ADJUSTMENTS
INSTALLATION DETAIL



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DETAIL: FSWA - 517



NOTE:
TO USE THE O-RING
GASKET, MINIMUM OF 7/8"
MATING SURFACE IS REQUIRED

STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

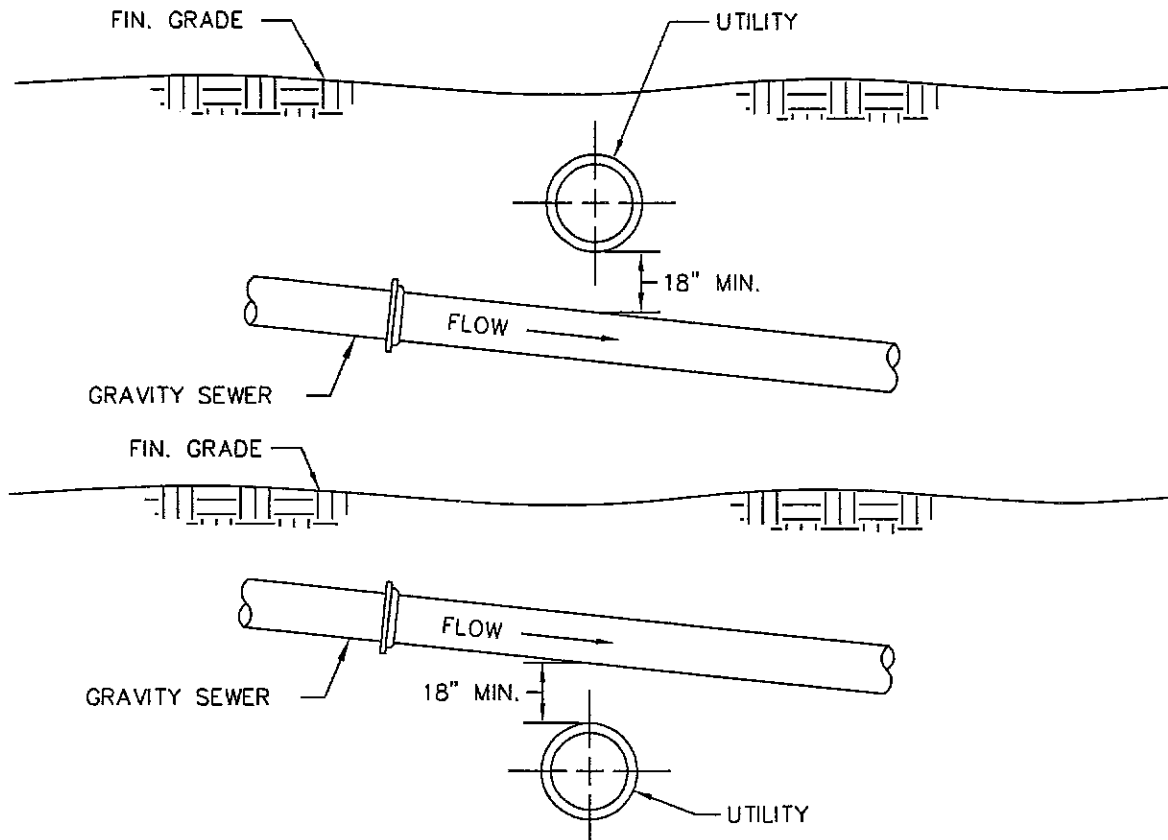
SELF SEALING MANHOLE COVER DETAIL

SESI

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DETAIL: FSWA - 518



NOTE: MAINTAIN SLOPE OF PROPOSED SEWER AT ALL CROSSINGS.

STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

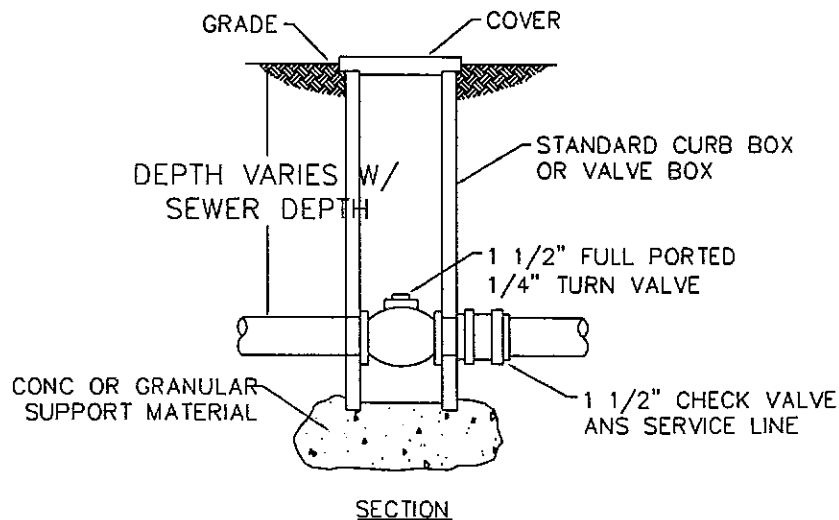
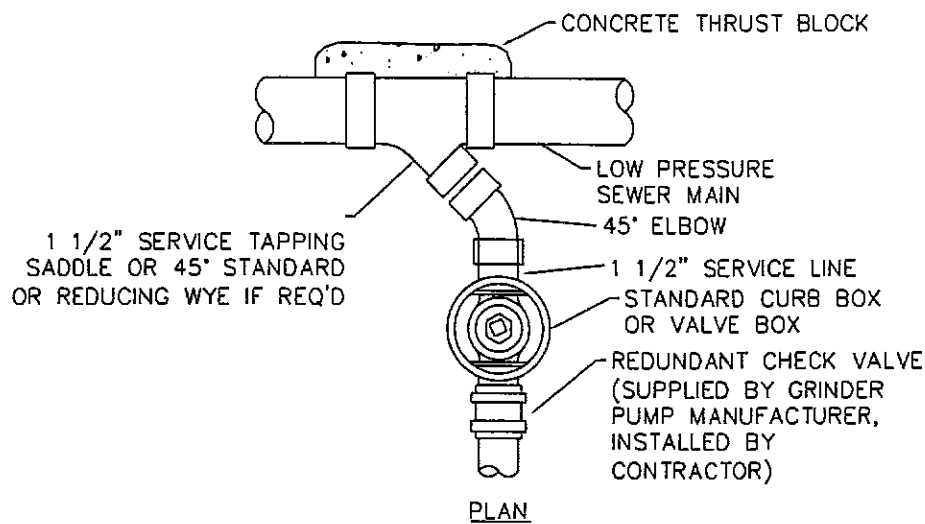
GRAVITY SEWER UTILITY CROSSING DETAIL



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DETAIL: FSWA - 519



LOW PRESSURE SERVICE LINE
CONNECTION AT LOW PRESSURE MAIN
 NOT TO SCALE

STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

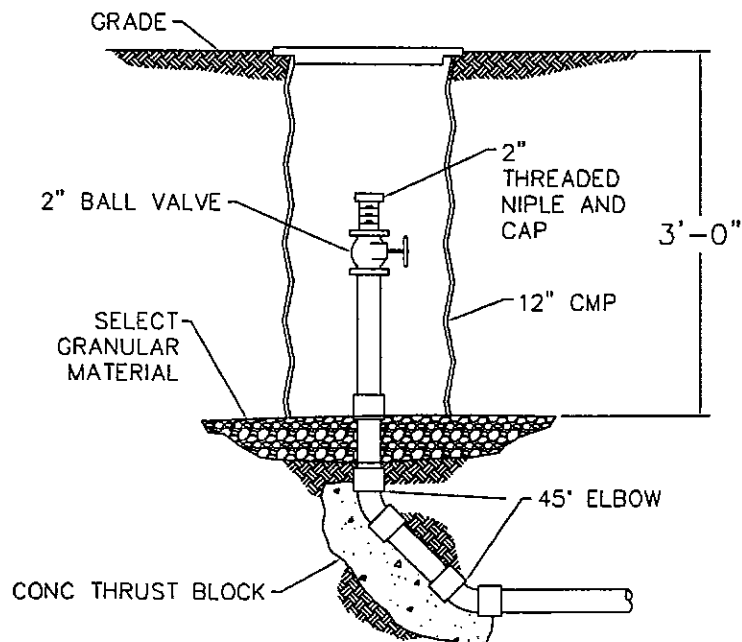
LOW PRESSURE SERVICE LINE CONNECTION DETAIL



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DETAIL: FSWA - 520



LOW PRESSURE TERMINAL CLEANOUT
NOT TO SCALE

STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

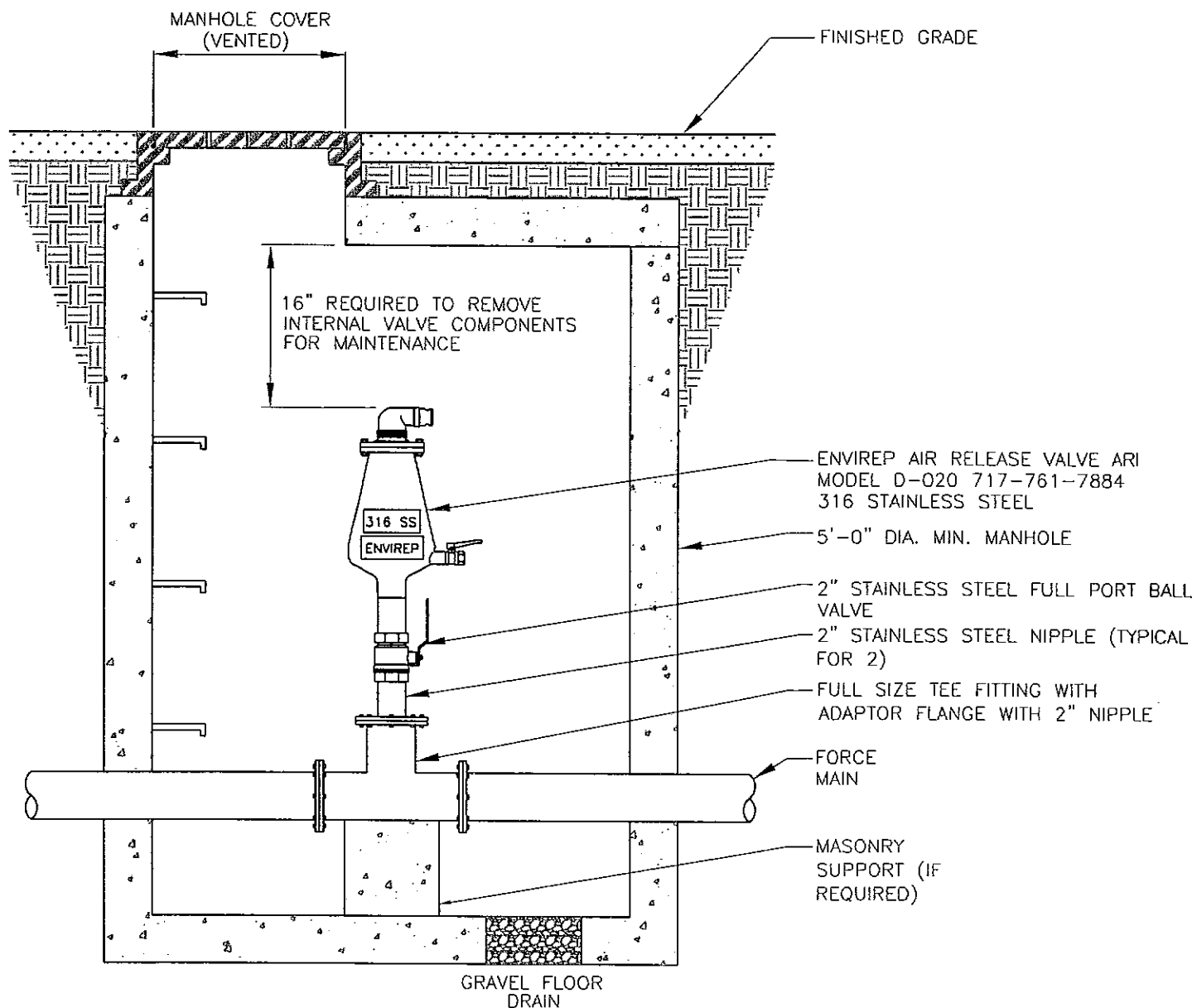
LOW PRESSURE TERMINAL CLEANOUT DETAIL



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DETAIL: FSWA - S21



STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

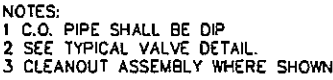
AIR RELEASE VALVE MANHOLE INSTALLATION DETAIL



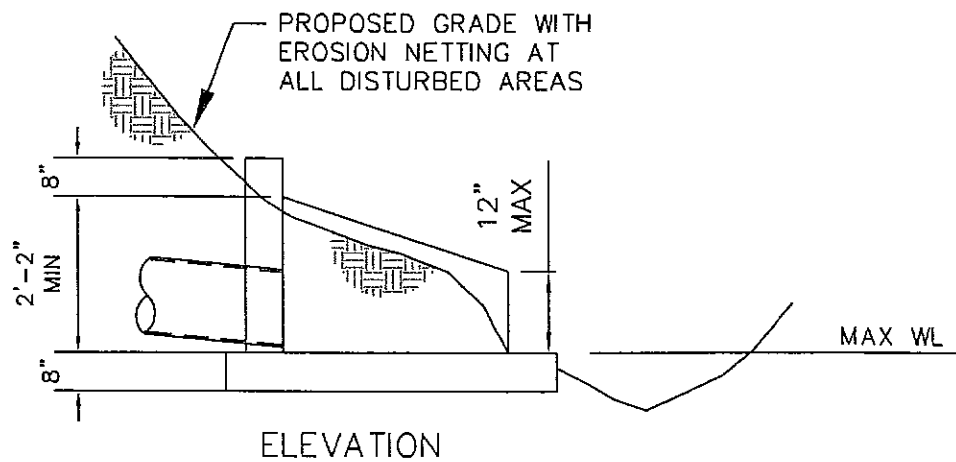
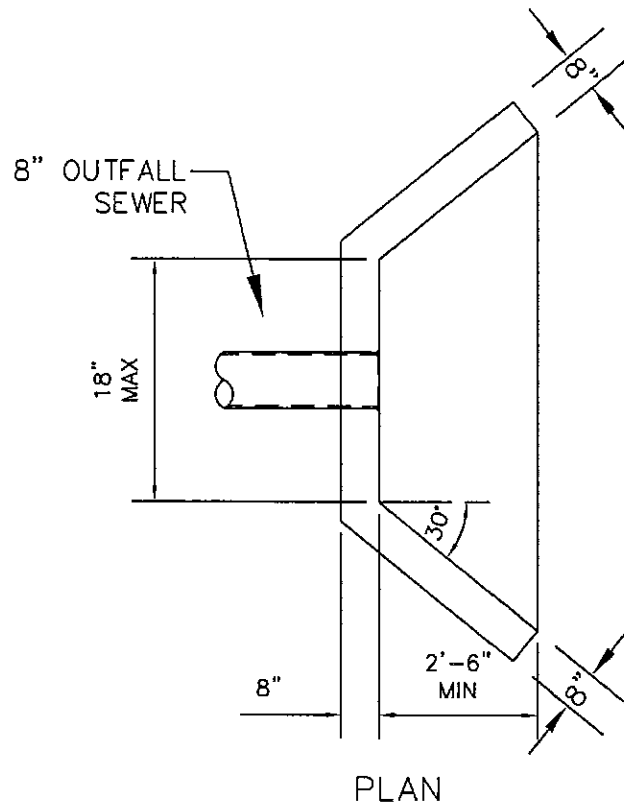
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DETAIL: FSWA - 522



DETAIL: FSWA - S23



STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

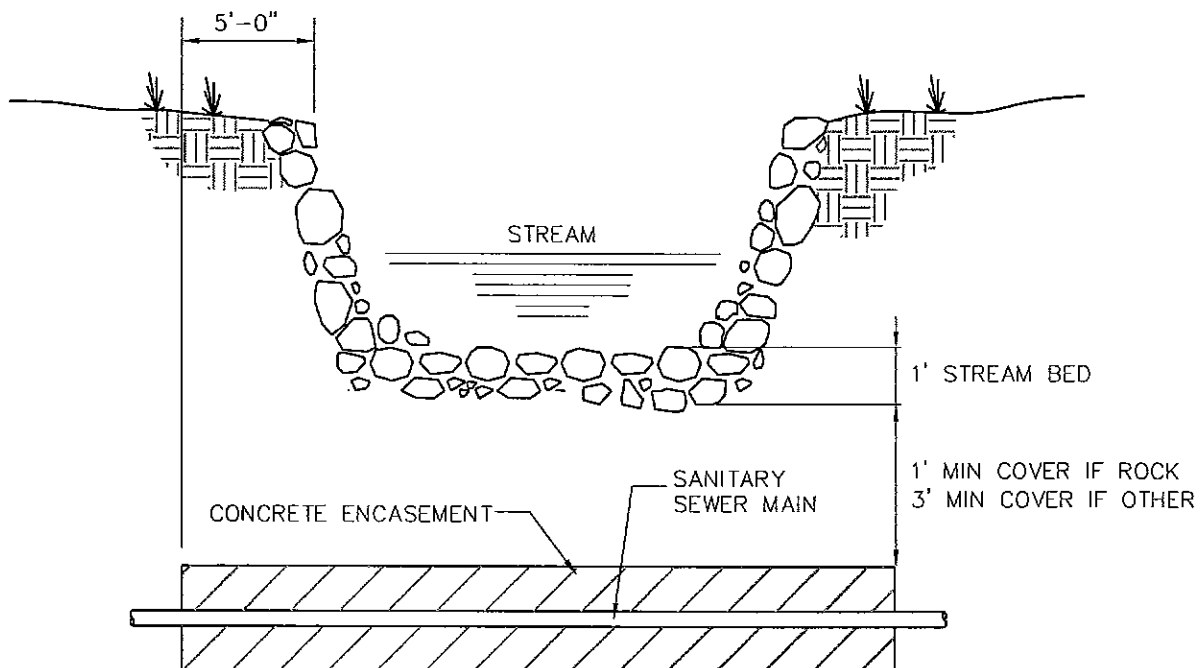
OUTFALL ENDWALL DETAIL



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DETAIL: FSWA - S24



SEWER MAIN STREAM CROSSING DETAIL

NOT TO SCALE

STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

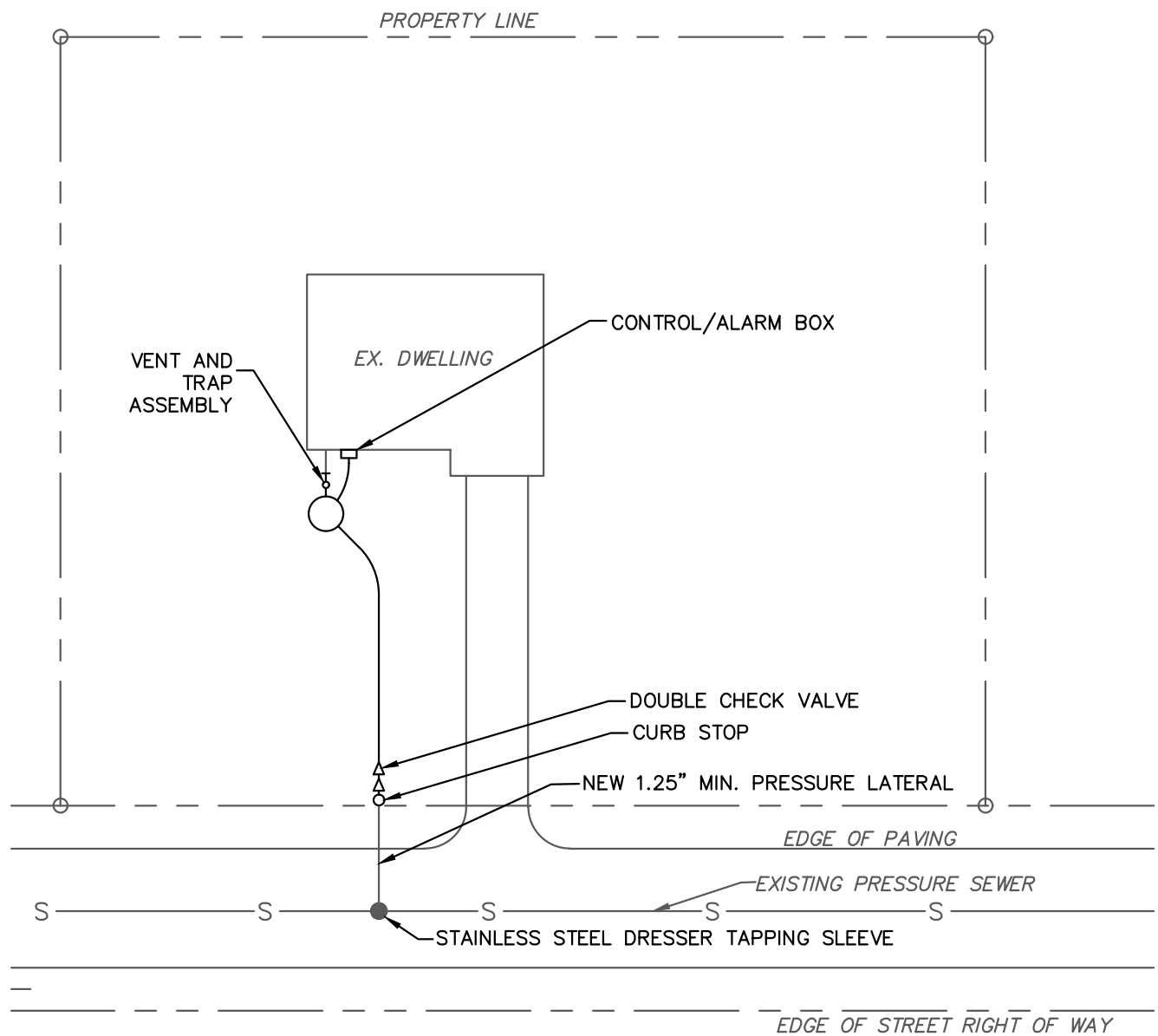
SEWER MAIN STREAM CROSSING DETAIL



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DETAIL: FSWA - S25



CONNECTION TO A PRESSURE MAIN

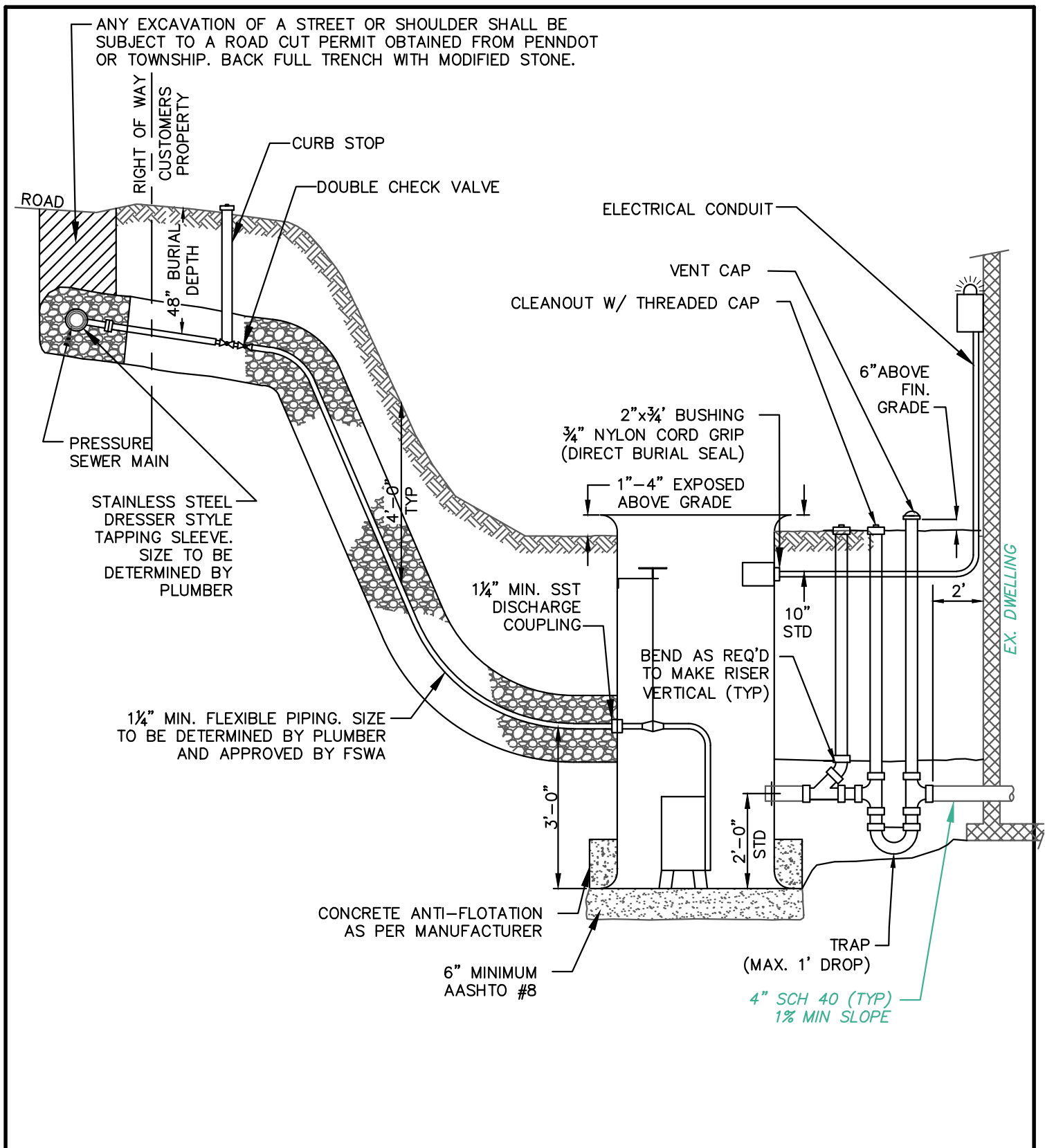
GRINDER STATION SERVICE LINE



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DATE: MARCH 2019

DETAIL: FSWA-S26



CONNECTION TO PRESSURE SEWER MAIN

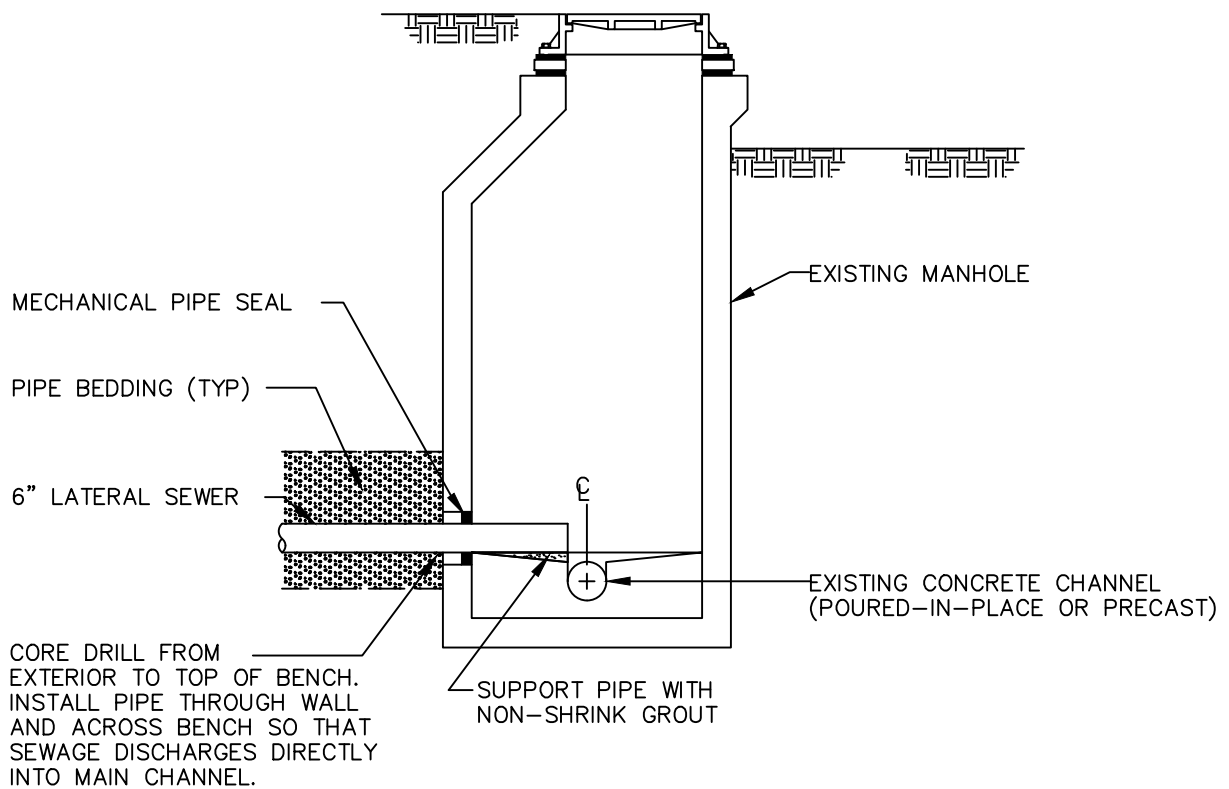
TYPICAL PACKAGE GRINDER STATION



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DATE: MARCH 2019

DETAIL: FSWA - S27



STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

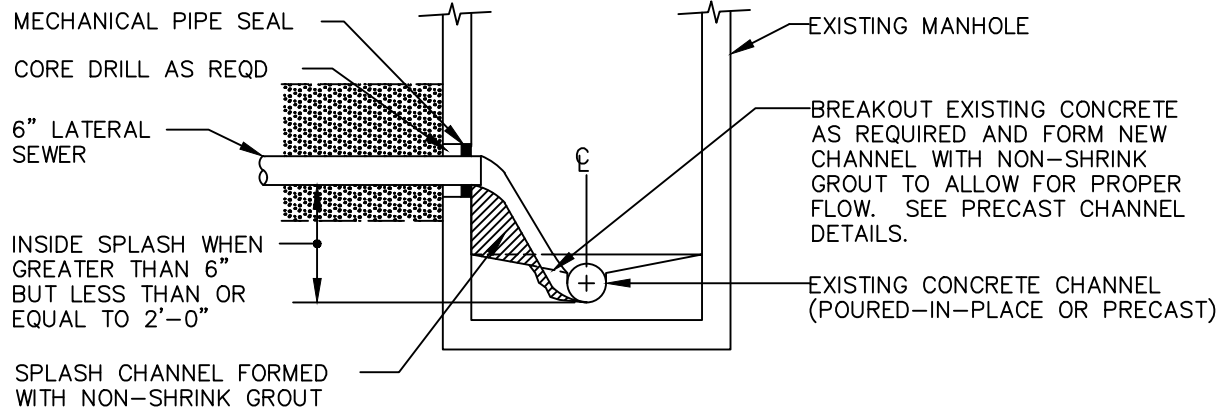
LATERAL INSTALLATION DETAIL - LATERAL INTO EXISTING MANHOLE



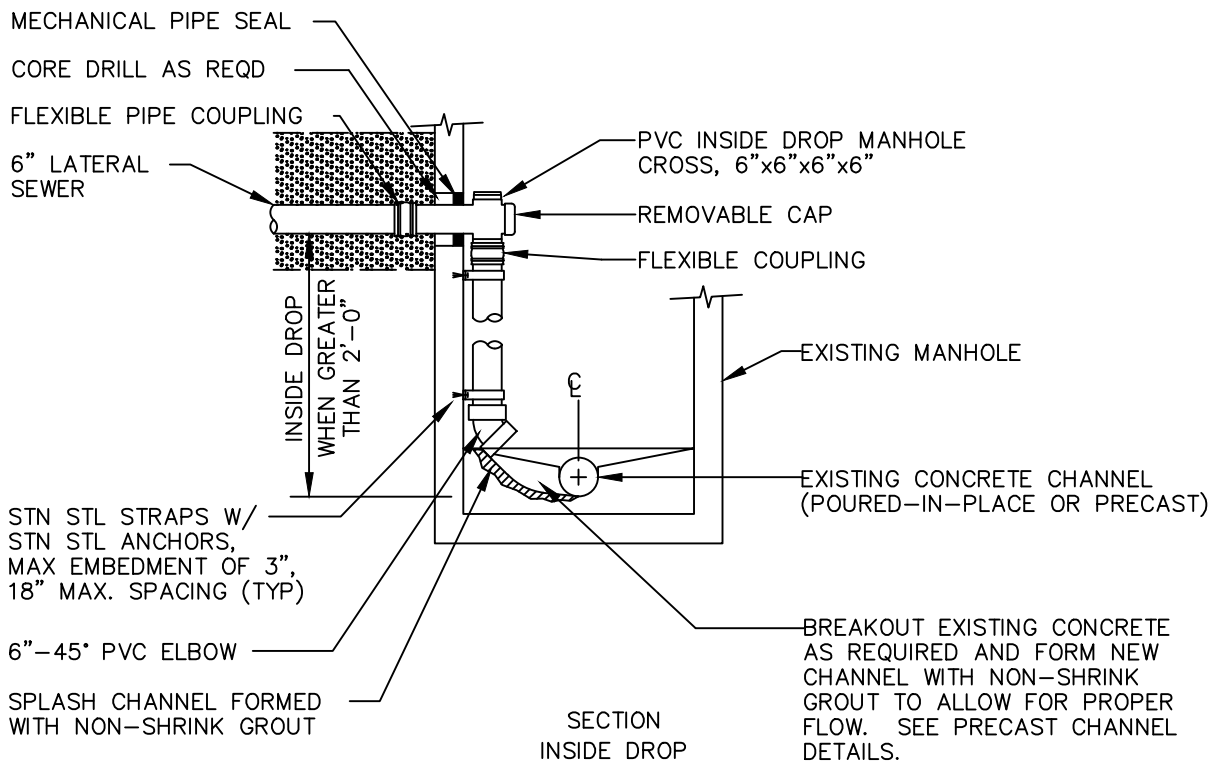
STECKBECK ENGINEERING & SURVING INC
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DATE: OCTOBER 2008

DETAIL: FSWA - S101



SECTION
INSIDE SPLASH



STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

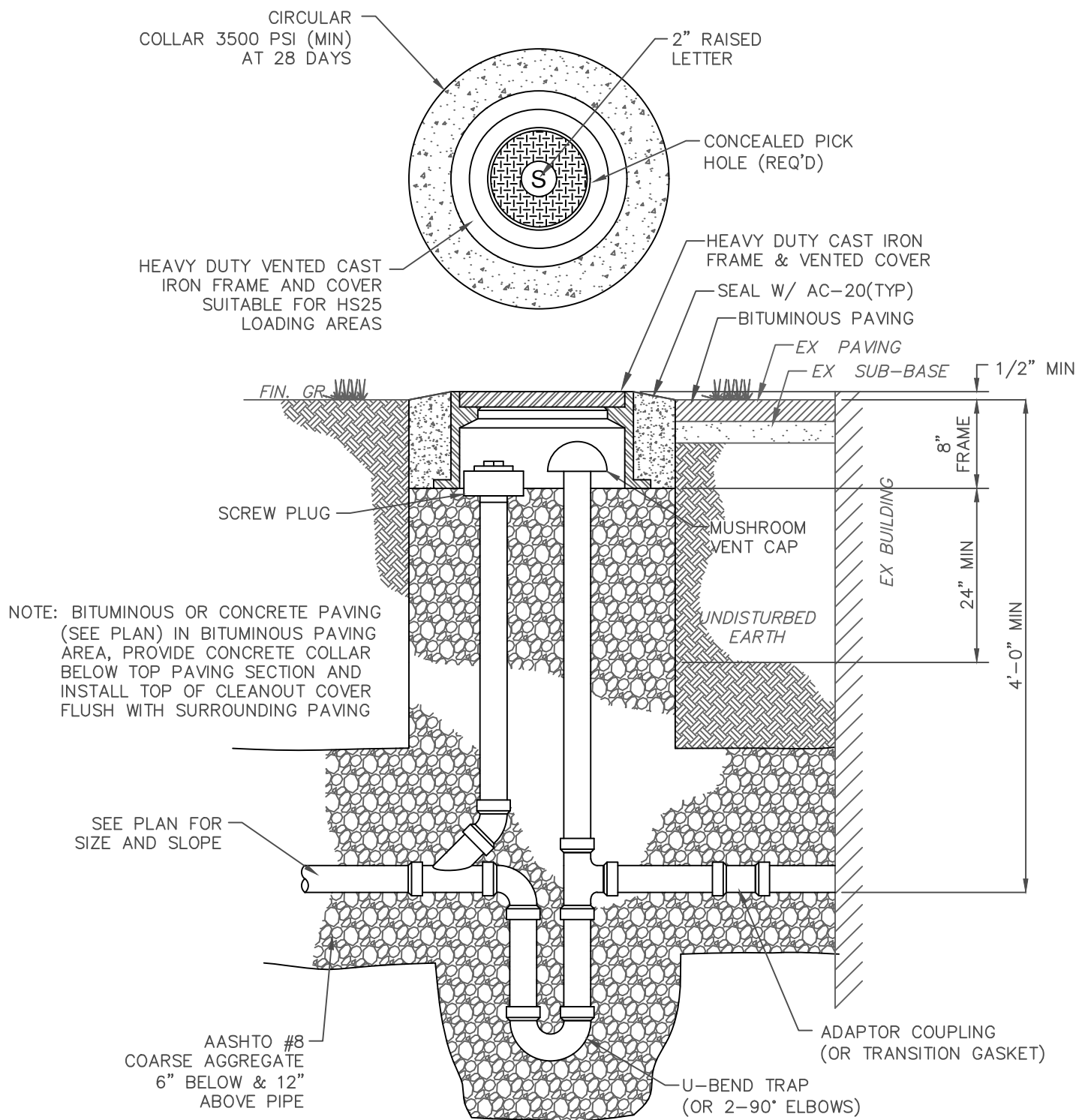
LATERAL INSTALLATION DETAIL - INSIDE SPLASH/DROP INTO EXISTING MANHOLE



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DATE: OCTOBER 2008

DETAIL: FSWA - S102



STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

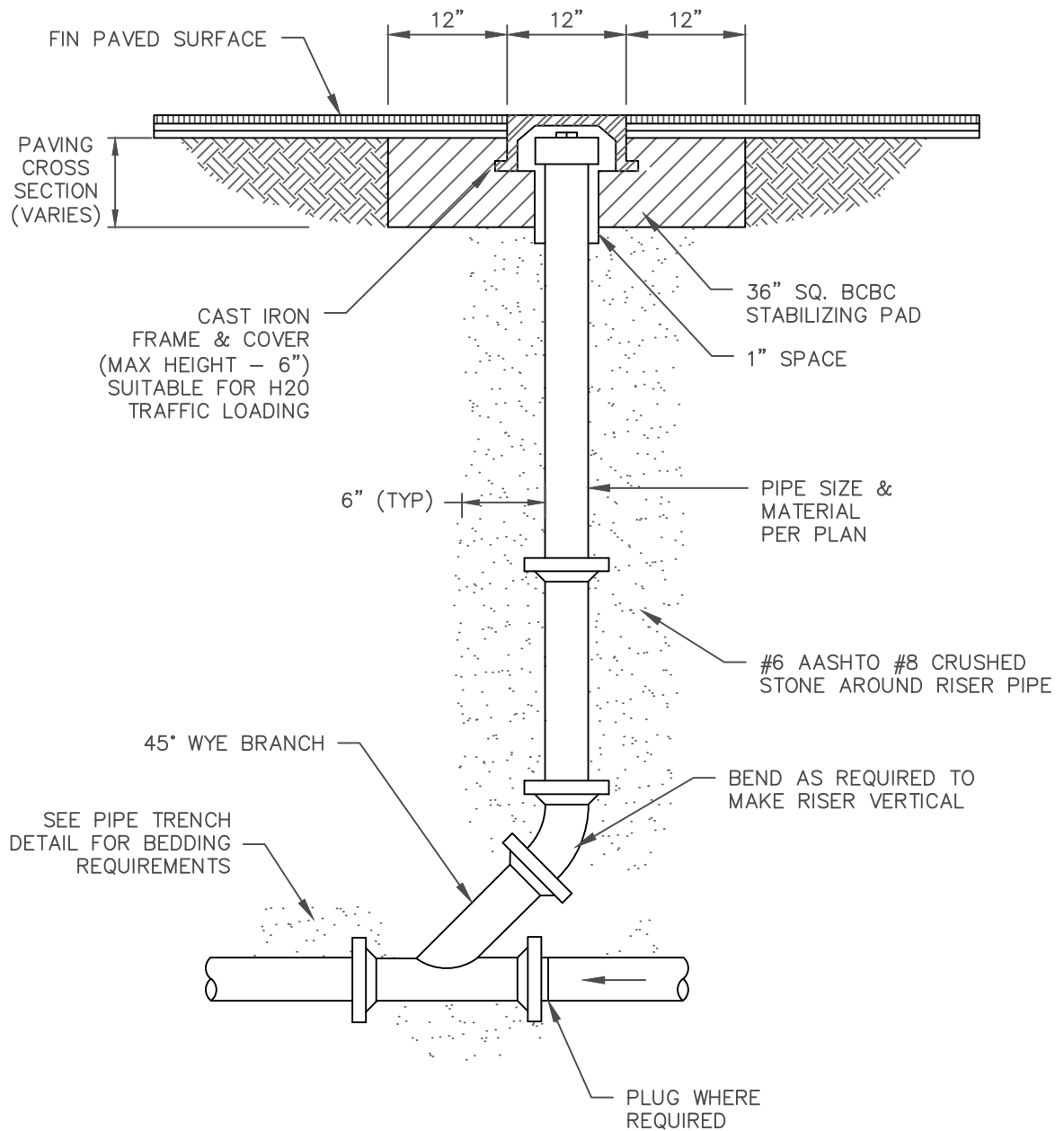
VENT, TRAP & CLEANOUT INSTALLATION DETAIL



STECKBECK ENGINEERING & SURVING INC
279 N ZINNS MILL ROAD
LEBANON, PA 17042
P: (717) 272-7110 F: (717) 272-7348

DATE: OCTOBER 2008

DETAIL: FSWA - S103



STANDARD DETAILS FOR SANITARY SEWER SYSTEMS

CLEANOUT INSTALLATION DETAIL - PAVED AREAS



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DETAIL: FSWA - S104