

Chapter II

Drawing #

Drawing Name

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**STANDARD DRAWING
INDEX**

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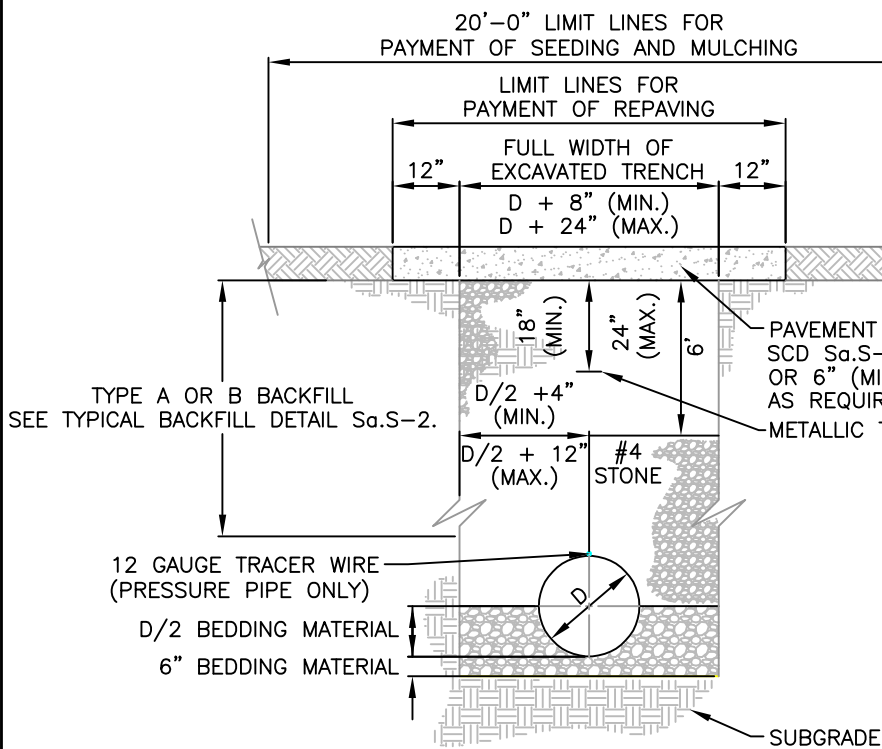
DRAWING NO.

Sa.S-A

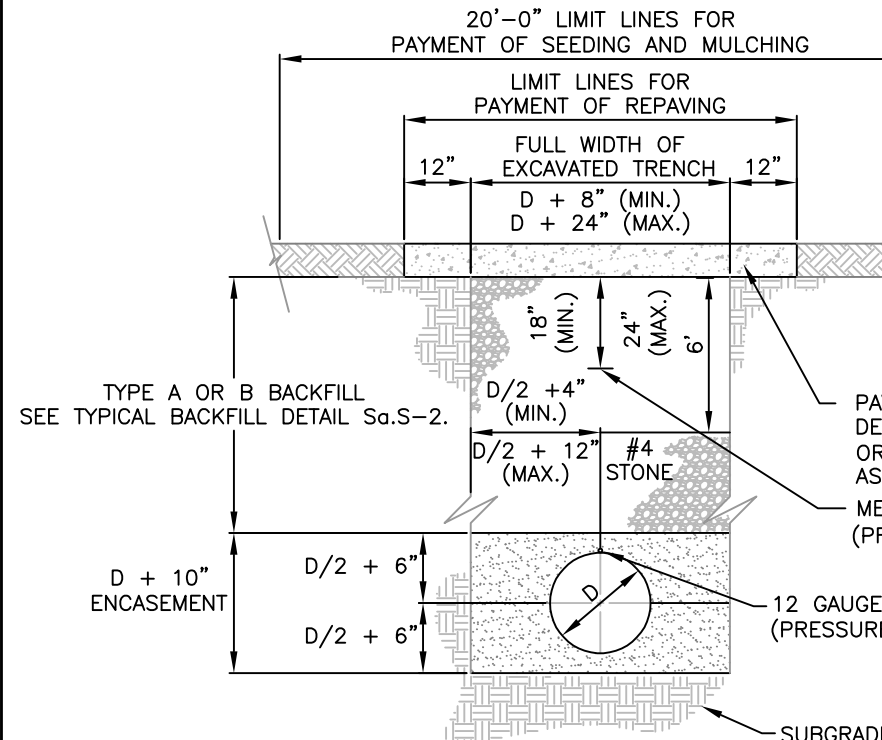
**STANDARD
CONSTRUCTION
DRAWING**

SHEET NO.

1 of 1



SECTION WITH BEDDING MATERIAL



SECTION WITH ENCASEMENT

NOTES:

1. ITEM NUMBERS REFER TO THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS.
2. AGGREGATE FOR BEDDING SHALL BE WASHED AND BE NO. 57 PER ITEM 304.01.
3. TYPE A BACKFILL SHALL BE GRANULAR MATERIAL AS SPECIFIED IN ODOT ITEM 703.17, AGGREGATE MATERIALS FOR ITEM 304. SEE TYPICAL BACKFILL DETAIL Sa.S-2. COMPACTION SHALL MEET THE REQUIREMENTS OF ITEM 304.
4. TYPE B BACKFILL SHALL BE EMBANKMENT MATERIAL AS SPECIFIED IN ODOT ITEM 203, COMPACTED TO 95% OF ITS MAXIMUM LABORATORY DRY DENSITY.
5. THE EXCAVATED TRENCH WIDTH 12" ABOVE THE CONDUIT MAY BE INCREASED WITHOUT ADDITIONAL COMPENSATION.
6. RIGID PIPE SHALL INCLUDE DUCTILE IRON.
7. ENCASEMENT SHALL BE CLASS QC4 CONCRETE PER ODOT ITEM 499.
8. SECTIONS ARE SYMMETRICAL ABOUT THE CENTERLINE.
9. FOR TRENCHES BENEATH PUBLIC ROADS THAT EXCEED 100 FEET IN LENGTH, CONTACT THE DELAWARE COUNTY ENGINEER'S OFFICE FOR OTHER REQUIREMENTS.



TYPICAL TRENCH FOR RIGID PIPE

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Sa.S-1

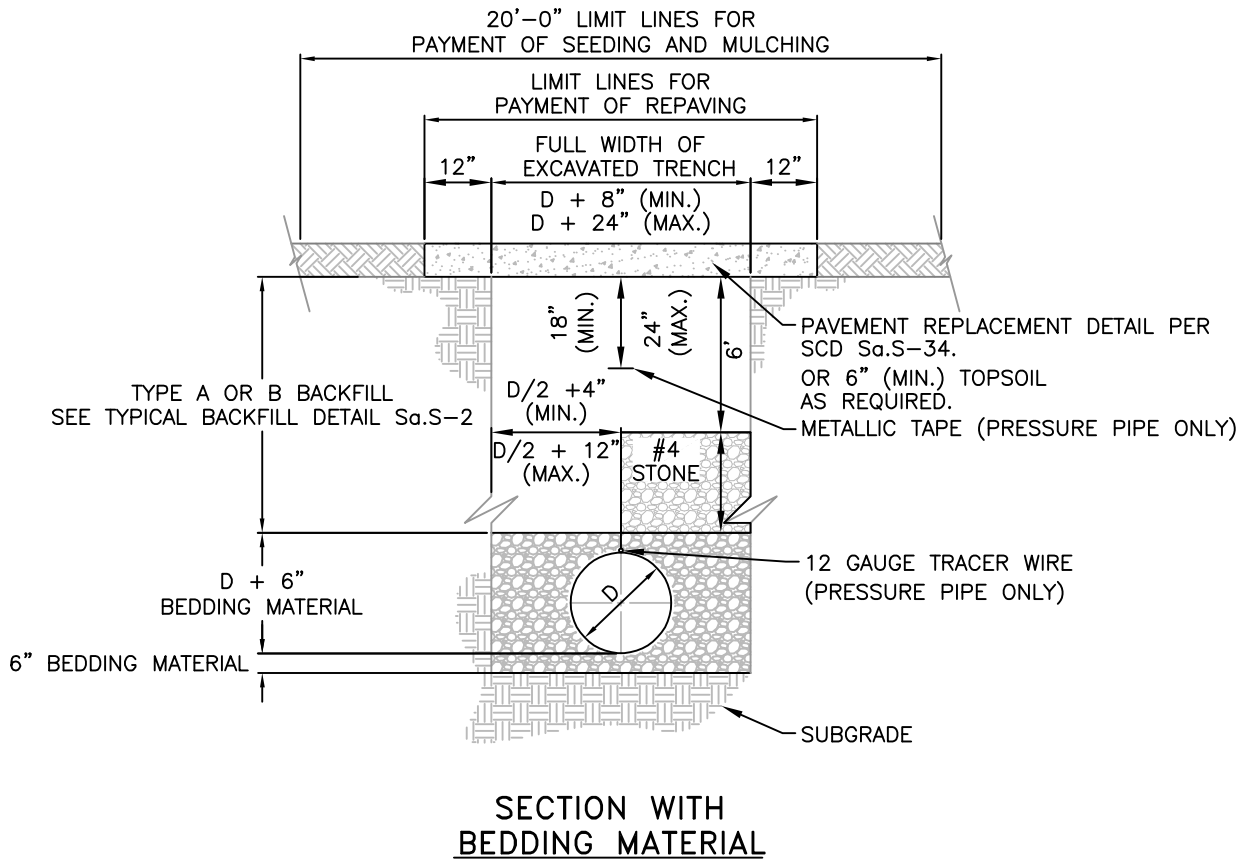
STANDARD CONSTRUCTION DRAWING

SHEET NO.

1 of 2

NOTES:

1. ITEM NUMBERS REFER TO THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS.
2. AGGREGATE FOR BEDDING SHALL BE WASHED AND BE NO. 57 PER ITEM 304.01.
3. TYPE A BACKFILL SHALL BE GRANULAR MATERIAL AS SPECIFIED IN ODOT ITEM 703.17, GRANULAR MATERIAL. SEE TYPICAL BACKFILL DETAIL Sa.S-2. COMPACTION SHALL MEET THE REQUIREMENTS OF ODOT ITEM 304.
4. TYPE B BACKFILL SHALL BE EMBANKMENT MATERIAL AS SPECIFIED IN ODOT ITEM 203, COMPACTED TO 95% OF ITS MAXIMUM LABORATORY DRY DENSITY.
5. THE EXCAVATED TRENCH WIDTH 12" ABOVE THE CONDUIT MAY BE INCREASED WITHOUT ADDITIONAL COMPENSATION.
6. FLEXIBLE PIPE SHALL INCLUDE PVC AND POLYPROPYLENE.
7. ENCASEMENT SHALL BE CLASS QC4 CONCRETE PER ODOT ITEM 499.
8. FOR TRENCHES BENEATH PUBLIC ROADS THAT EXCEED 100 FEET IN LENGTH, CONTACT THE DELAWARE COUNTY ENGINEER'S OFFICE FOR OTHER REQUIREMENTS.



TYPICAL TRENCH FOR FLEXIBLE PIPE

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Sa.S-1

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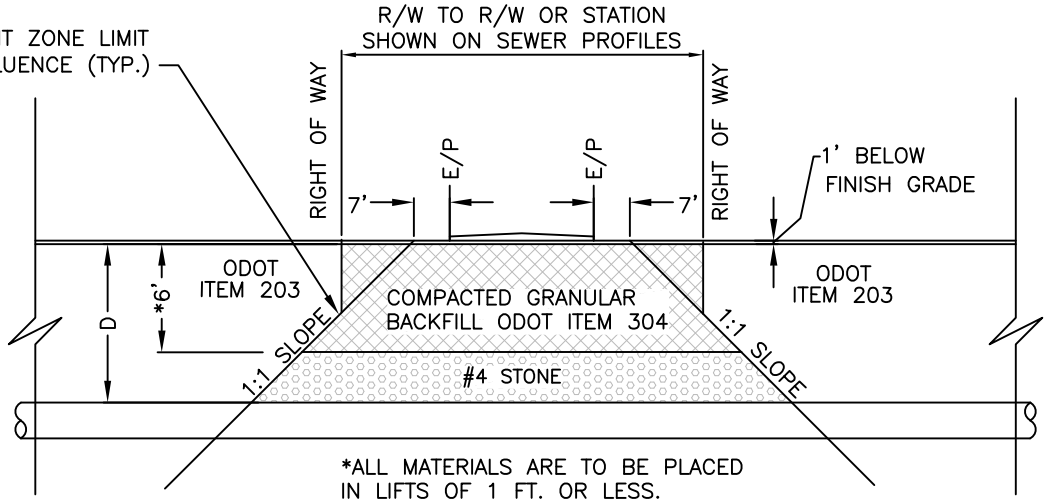
SHEET NO.

2 of 2

PAVEMENT ZONE LIMIT OF INFLUENCE (TYP.)

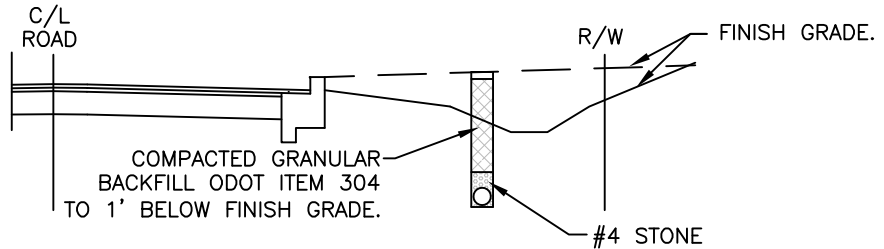
*PROVIDE LESSER OF 6' OR D THICKNESS OF COMPACTED GRANULAR MATERIAL PER ODOT ITEM 304 BELOW THE PROPOSED SUBGRADE TO THE TOP OF NO. 4 STONE.

FOR UTILITIES WITH LESS THAN 6' OF FILL FROM THE PROPOSED SUBGRADE TO THE TOP OF THE UTILITY, USE FULL-DEPTH COMPACTED GRANULAR MATERIAL PER ODOT ITEM 304.

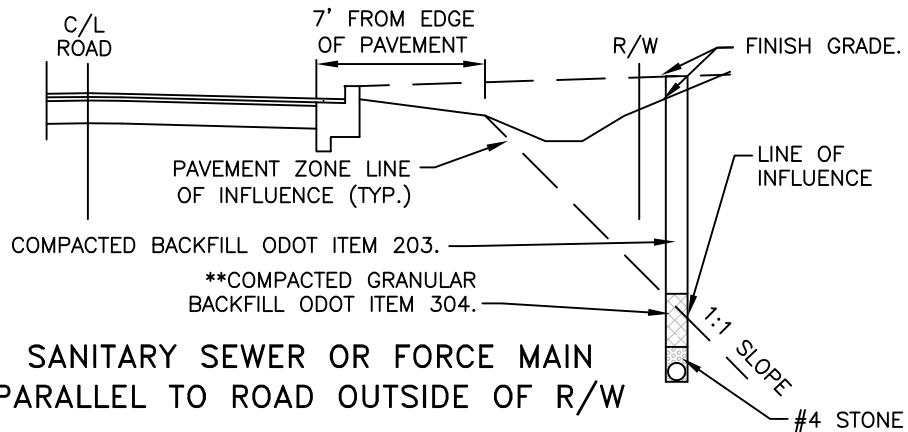


*ALL MATERIALS ARE TO BE PLACED IN LIFTS OF 1 FT. OR LESS.

SANITARY SEWER OR FORCE MAIN CROSSING THE ROAD



SANITARY SEWER OR FORCE MAIN PARALLEL TO ROAD INSIDE OF R/W



SANITARY SEWER OR FORCE MAIN PARALLEL TO ROAD OUTSIDE OF R/W

** FOR CUT SITUATIONS OUTSIDE OF THE R/W, NATIVE SOILS MAY BE USED FOR BACKFILL AS LONG AS 95% COMPACTION IS MET. TESTING IS REQUIRED FOR THE LAST 5 FEET OF FILL BEING PLACED AND MAY BE REQUIRED FOR ALL TRENCH BACKFILL AT THE DISCRETION OF THE SANITARY ENGINEER.



TYPICAL BACKFILL

(PUBLIC OR PRIVATE ROADS)

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Sa.S-2

STANDARD CONSTRUCTION DRAWING

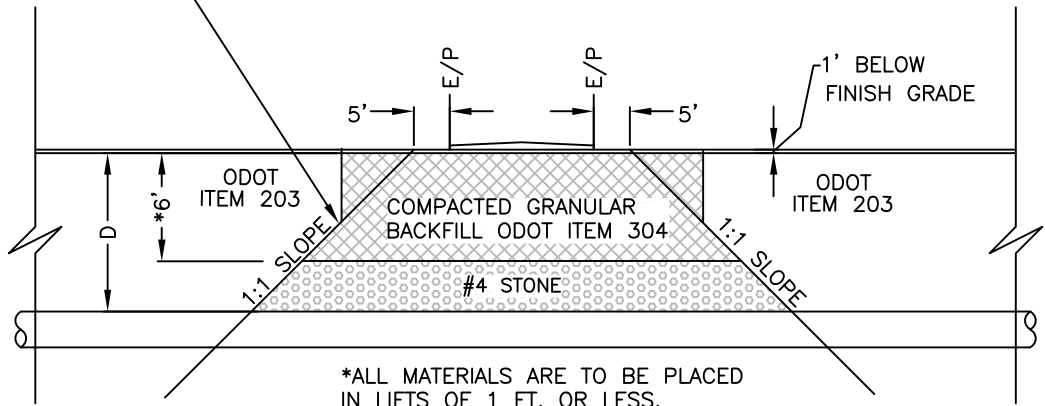
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1 of 2

PAVEMENT ZONE LIMIT OF INFLUENCE (TYP.)

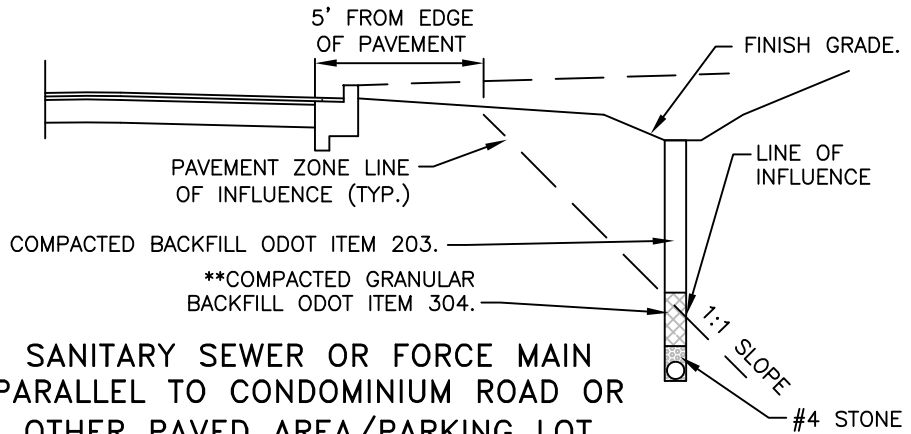
*PROVIDE LESSER OF 6' OR D THICKNESS OF COMPACTED GRANULAR MATERIAL PER ODOT ITEM 304 BELOW THE PROPOSED SUBGRADE TO THE TOP OF NO. 4 STONE.

FOR UTILITIES WITH LESS THAN 6' OF FILL FROM THE PROPOSED SUBGRADE TO THE TOP OF THE UTILITY, USE FULL-DEPTH COMPACTED GRANULAR MATERIAL PER ODOT ITEM 304.



*ALL MATERIALS ARE TO BE PLACED IN LIFTS OF 1 FT. OR LESS.

SANITARY SEWER OR FORCE MAIN CROSSING CONDOMINIUM ROAD OR OTHER PAVED AREA/PARKING LOT



SANITARY SEWER OR FORCE MAIN PARALLEL TO CONDOMINIUM ROAD OR OTHER PAVED AREA/PARKING LOT

** NATIVE SOILS MAY BE USED FOR BACKFILL AS LONG AS 95% COMPACTION IS MET. TESTING IS REQUIRED FOR THE LAST 5 FEET OF FILL BEING PLACED AND MAY BE REQUIRED FOR ALL TRENCH BACKFILL AT THE DISCRETION OF THE SANITARY ENGINEER.



TYPICAL BACKFILL
(CONDOMINIUM ROAD OR OTHER PAVED AREAS)

APPROVED:

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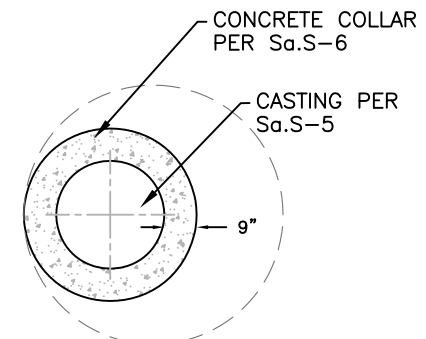
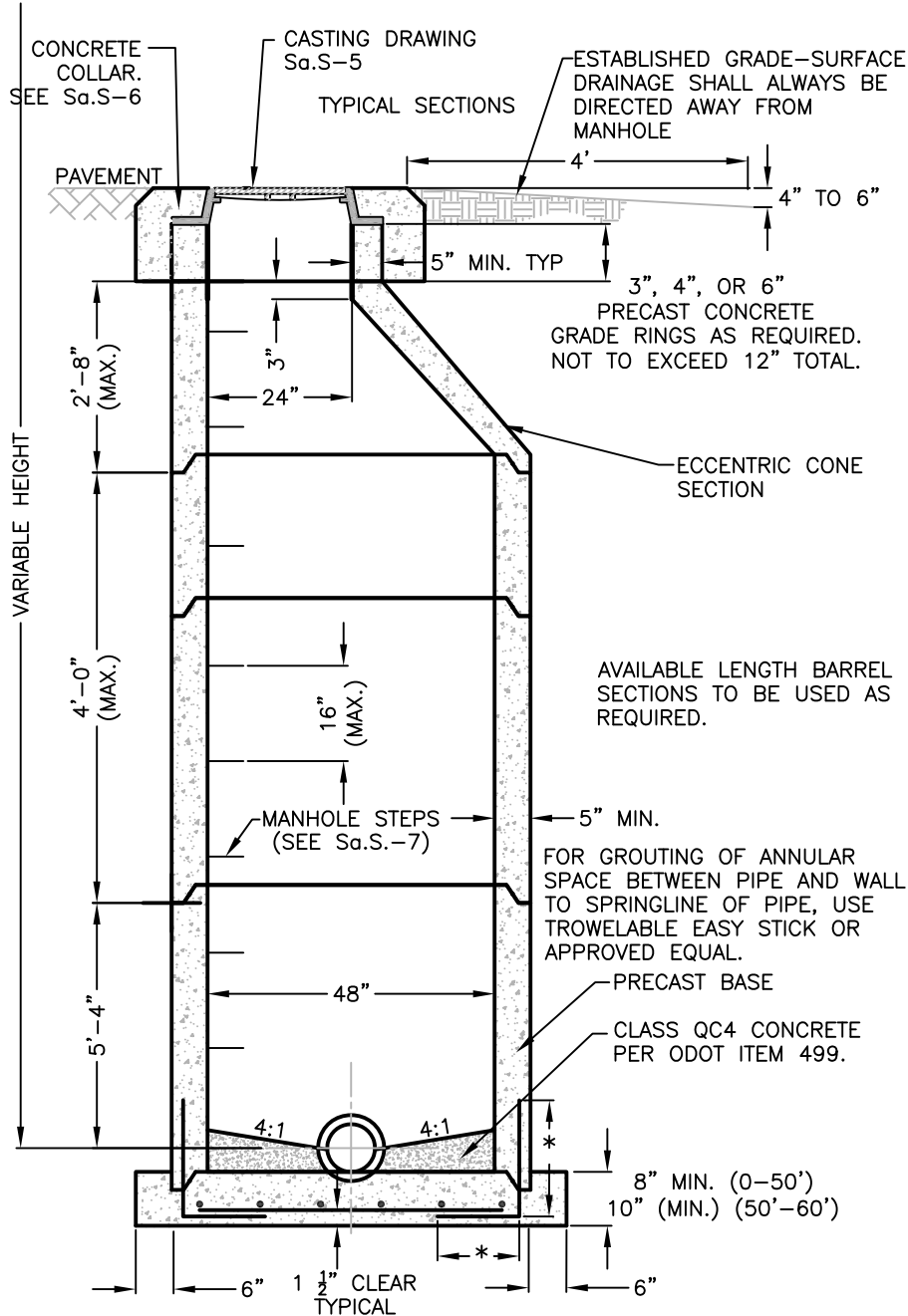
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Sa.S-2

STANDARD CONSTRUCTION DRAWING

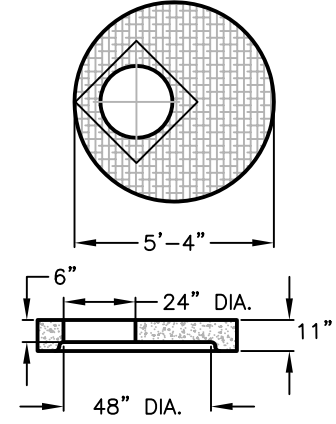
SHEET NO.

2 of 2



PLAN VIEW

NOTE: CONCRETE COLLAR NOT REQUIRED WHEN ALTERNATE TOP SLAB IS INSTALLED.



ALTERNATE TOP SLAB

SEE NOTE #1

FOR GROUTING OF ANNULAR SPACE BETWEEN PIPE AND WALL TO SPRINGLINE OF PIPE, USE TROWELABLE EASY STICK OR APPROVED EQUAL.

M.H. DEPTH	BASE SLAB REINFORCEMENT SQ. IN./FT. E.W.
0'-10'	0.17
10'-20'	0.22
20'-30'	0.27
30'-40'	0.32
40'-50'	0.36
50'-60'	0.32

*30 BAR DIAMETERS, 12" MIN.

NOTES:

1. WHEN SHOWN IN TRAFFIC AREAS, THE ALTERNATE TOP SLAB SHALL BE DESIGNED FOR TRAFFIC LOADING.
2. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO ASTM C478 UNLESS OTHERWISE SHOWN.
3. ALL CORE DRILLED OPENINGS SHALL BE DONE ONLY AS APPROVED AND DIRECTED BY THE SANITARY ENGINEER.
4. PRECAST CONCRETE GRADE RINGS, SEALED WITH CONSEAL, SHALL BE USED IF NEEDED BETWEEN THE SLAB OR CONE TOP AND THE ACCESS FRAME CASTING AND COVER. NO MANHOLE BRICK SHALL BE PERMITTED FOR USE.
5. SEWER PIPE SHALL BE SECURED THROUGH THE MANHOLE WALL BY KOR-N-SEAL BOOT, PRESS WEDGE 2 GASKET OR APPROVED EQUIVALENT MEETING ASTM C923. CONNECTORS MADE BY A-LOK ARE NOT APPROVED EQUALS.
6. MANHOLE SECTIONS SHALL BE ASSEMBLED WITH CONSEAL, OR APPROVED EQUAL, AT ALL SECTION JOINTS IN ADDITION TO THE SEALED O-RING JOINT.
7. SANITARY ENGINEER MAY REQUEST A TYPE B OR TYPE C MANHOLE TO PROVIDE PROPER ACCESS.
8. IF WELDED WIRE FABRIC IS USED IN LIEU OF METAL BAR FOR REINFORCEMENT, AREA OF STEEL MAY BE REDUCE BY 1/3.



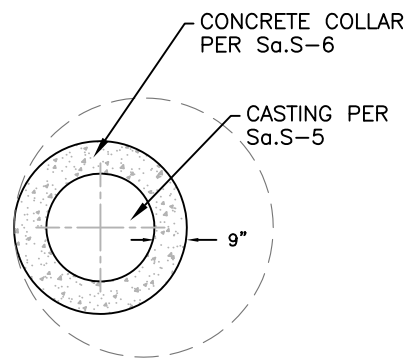
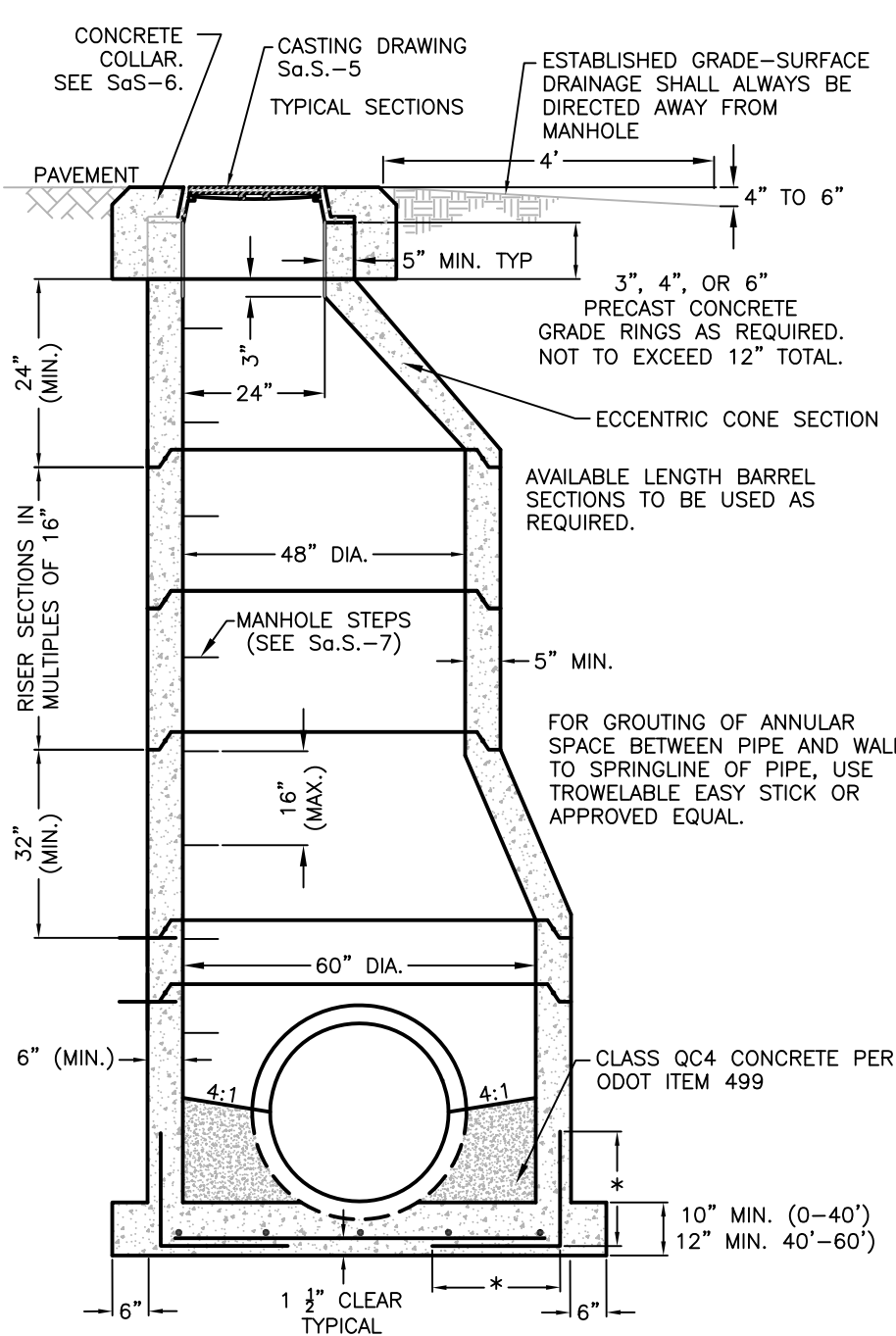
PRECAST CONCRETE MANHOLE, TYPE A (24" PIPE AND SMALLER)

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STANDARD CONSTRUCTION DRAWING

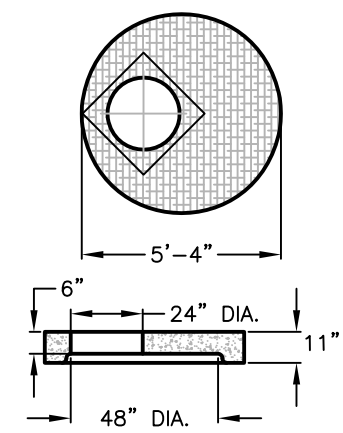
DRAWING NO.
Sa.S-3

SHEET NO.
1 of 3



PLAN VIEW

NOTE: CONCRETE COLLAR NOT REQUIRED WHEN ALTERNATE TOP SLAB IS INSTALLED.



ALTERNATE TOP SLAB

SEE NOTE #1

M.H. DEPTH	BASE SLAB REINFORCEMENT SQ. IN./FT. E.W.
0'-10'	0.16
10'-20'	0.26
20'-30'	0.35
30'-40'	0.43
40'-50'	0.46
50'-60'	0.50

*30 BAR DIAMETERS, 12" MIN.

NOTES:

1. WHEN SHOWN IN TRAFFIC AREAS, THE ALTERNATE TOP SLAB SHALL BE DESIGNED FOR TRAFFIC LOADING.
2. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO ASTM C478-70 UNLESS OTHERWISE SHOWN.
3. ALL CORE DRILLED OPENINGS SHALL BE DONE ONLY AS APPROVED AND DIRECTED BY THE SANITARY ENGINEER.
4. PRECAST CONCRETE GRADE RINGS, SEALED WITH CONSEAL, SHALL BE USED IF NEEDED BETWEEN THE SLAB OR CONE TOP AND THE ACCESS FRAME CASTING AND COVER. NO MANHOLE BRICK SHALL BE PERMITTED FOR USE.
5. SEWER PIPE SHALL BE SECURED THROUGH THE MANHOLE WALL BY KOR-N-SEAL BOOT, PRESS WEDGE 2 GASKET OR APPROVED EQUIVALENT MEETING ASTM C923. CONNECTORS MADE BY A-LOK ARE NOT APPROVED EQUALS.
6. MANHOLE SECTIONS SHALL BE ASSEMBLED WITH CONSEAL, OR APPROVED EQUAL, AT ALL SECTION JOINTS IN ADDITION TO THE SEALED O-RING JOINT.
7. SANITARY ENGINEER MAY REQUEST A TYPE A OR TYPE C MANHOLE TO PROVIDE PROPER ACCESS.
8. IF WELDED WIRE FABRIC IS USED IN LIEU OF METAL BAR FOR REINFORCEMENT, AREA OF STEEL MAY BE REDUCED BY 1/3.



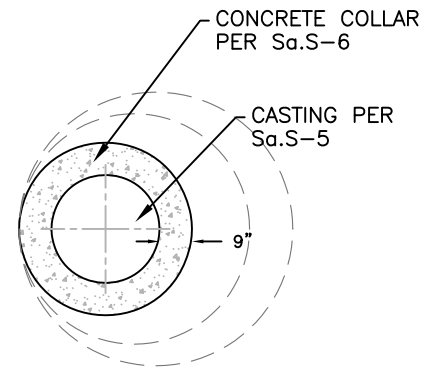
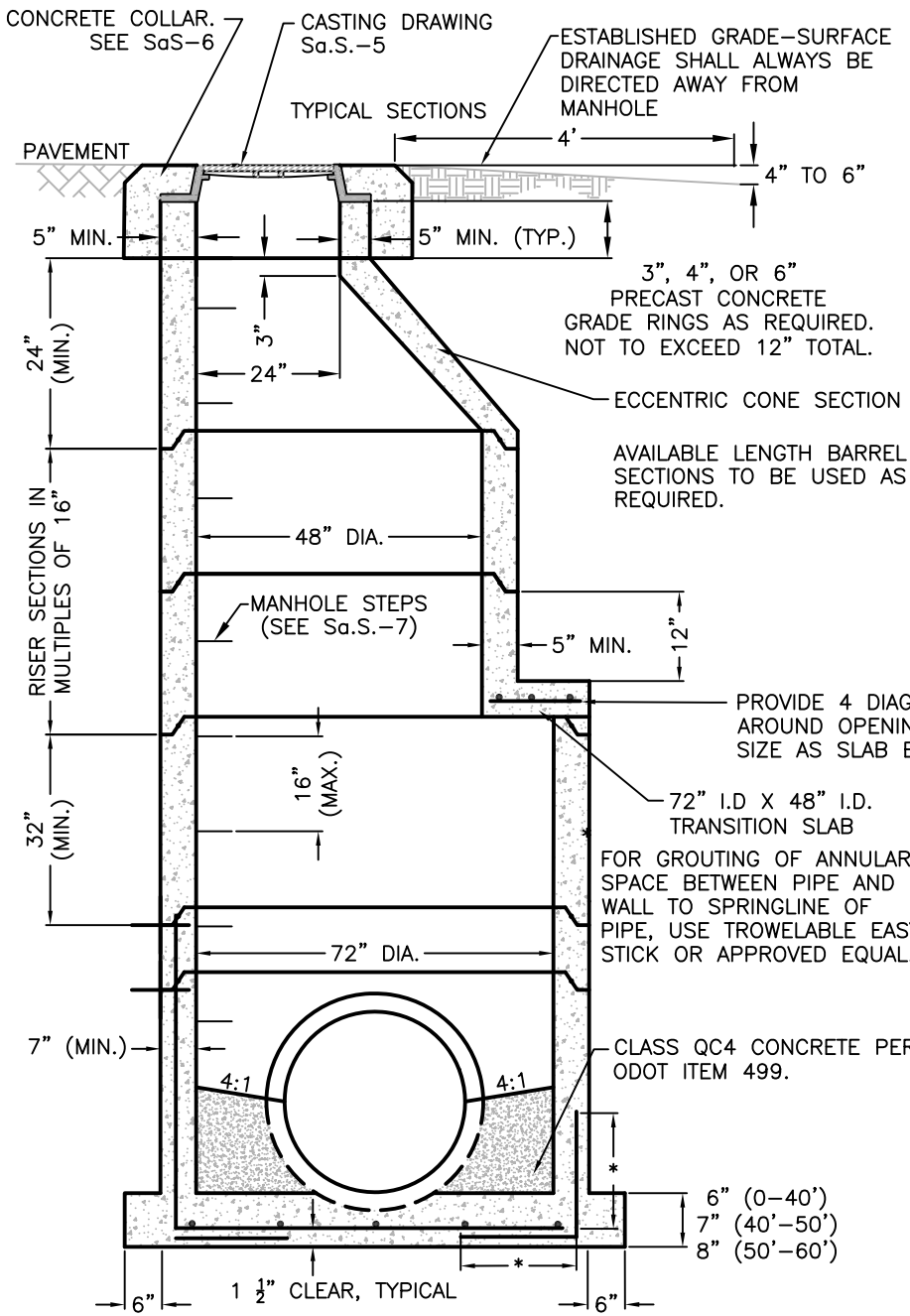
**PRECAST CONCRETE
MANHOLE, TYPE B
(27"-42" PIPE)**

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**STANDARD
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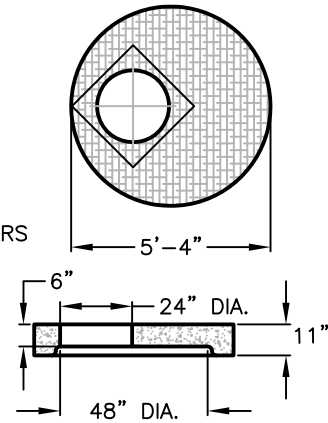
DRAWING NO.
Sa.S-3

SHEET NO.
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PLAN VIEW

NOTE: CONCRETE COLLAR NOT REQUIRED WHEN ALTERNATE TOP SLAB IS INSTALLED.



ALTERNATE TOP SLAB

SEE NOTE #1

M.H. DEPTH	REINFORCEMENT SQ. IN./FT. E.W.	
	BASE SLAB	FLAT SLAB
0'-10'	0.014	0.13
10'-20'	0.28	0.29
20'-30'	0.40	0.45
30'-40'	0.52	0.60
40'-50'	0.55	0.76
50'-60'	0.57	0.91

*30 BAR DIAMETERS, 12" MIN.

NOTES:

1. WHEN SHOWN IN TRAFFIC AREAS, THE ALTERNATE TOP SLAB SHALL BE DESIGNED FOR TRAFFIC LOADING.
2. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO ASTM C478-70 UNLESS OTHERWISE SHOWN.
3. ALL CORE DRILLED OPENINGS SHALL BE DONE ONLY AS APPROVED AND DIRECTED BY THE SANITARY ENGINEER.
4. PRECAST CONCRETE GRADE RINGS, SEALED WITH CONSEAL, SHALL BE USED IF NEEDED BETWEEN THE SLAB OR CONE TOP AND THE ACCESS FRAME CASTING AND COVER. NO MANHOLE BRICK SHALL BE PERMITTED FOR USE.
5. SEWER PIPE SHALL BE SECURED THROUGH THE MANHOLE WALL BY KOR-N-SEAL BOOT, PRESS WEDGE 2 GASKET OR APPROVED EQUIVALENT MEETING ASTM C923. CONNECTORS MADE BY A-LOK ARE NOT APPROVED EQUALS.
6. MANHOLE SECTIONS SHALL BE ASSEMBLED WITH CONSEAL, OR APPROVED EQUAL, AT ALL SECTION JOINTS IN ADDITION TO THE SEALED O-RING JOINT.
7. SANITARY ENGINEER MAY REQUEST A TYPE A OR TYPE B MANHOLE TO PROVIDE PROPER ACCESS.
8. IF WELDED WIRE FABRIC IS USED IN LIEU OF METAL BAR FOR REINFORCEMENT, AREA OF STEEL MAY BE REDUCED BY 1/3.



**PRECAST CONCRETE
MANHOLE, TYPE C
(PIPE LARGER THAN 42")**

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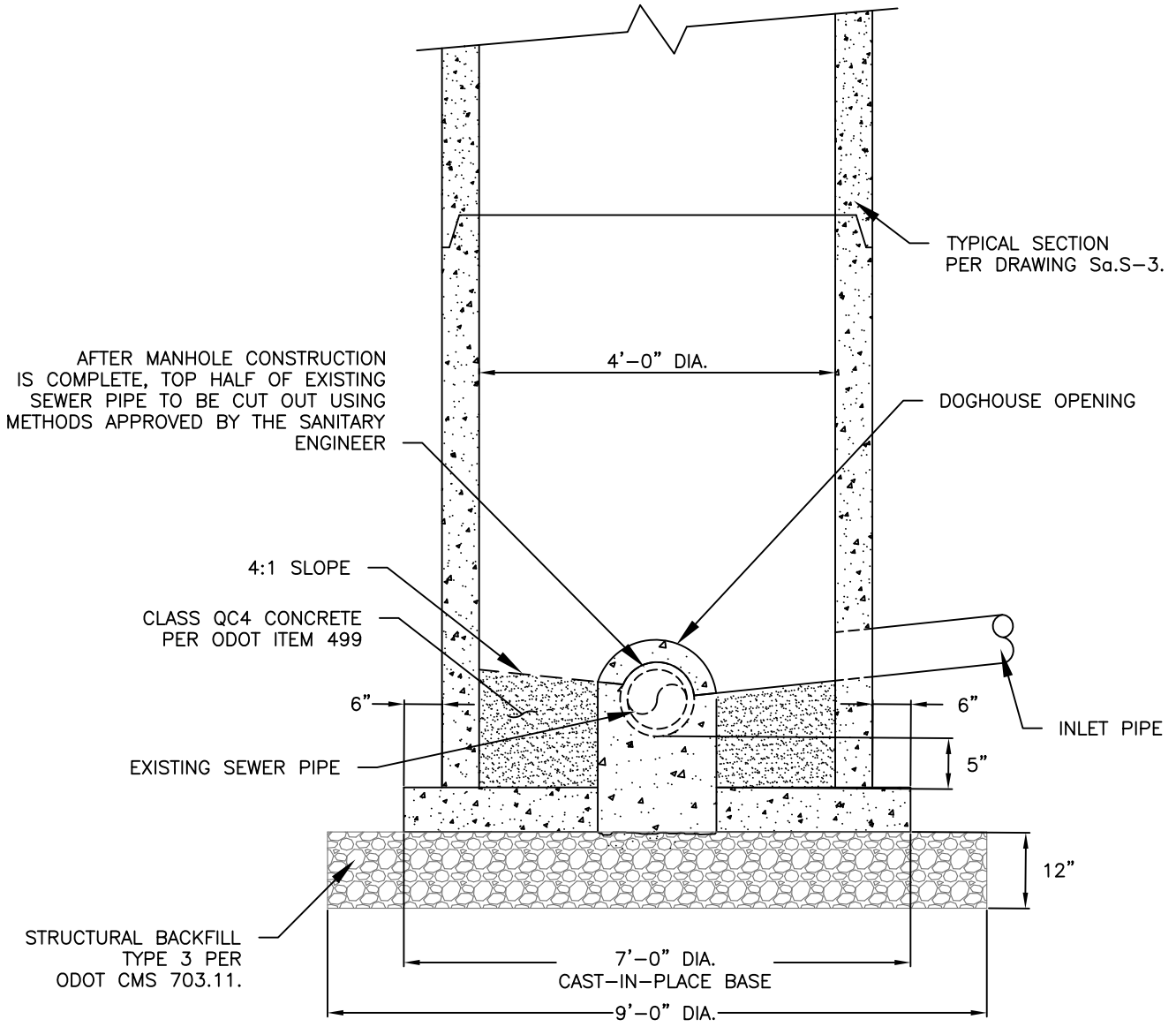
DRAWING NO.

Sa.S-3

**STANDARD
CONSTRUCTION
DRAWING**

SHEET NO.

3 of 3



NOTES:

1. DOGHOUSE MANHOLES MAY BE USED ON CONCRETE SEWER PIPE ONLY.
2. NEW SEWER PIPE SHALL BE SECURED THROUGH THE MANHOLE WALL BY "KOR-N-SEAL" BOOT, "PRESS WEDGE II" GASKET, OR AN APPROVED EQUIVALENT, MEETING ASTM C923.
3. ALL CONSTRUCTION AND MATERIAL SHALL CONFORM TO ASTM C478 UNLESS OTHERWISE SHOWN.
4. ALL FIELD CUT OPENINGS SHALL BE DONE ONLY AS DIRECTED BY THE SANITARY ENGINEER.
5. REFER TO DRAWING Sa.S-3 FOR MANHOLE CONSTRUCTION ABOVE DOGHOUSE STRUCTURE.
6. DOGHOUSE OPENING FOR EXISTING SEWER PIPE SHALL BE OUTSIDE DIAMETER OF THE PIPE PLUS 6 INCHES.
7. ANNULAR AREA BETWEEN DOGHOUSE OPENING AND EXISTING PIPE SHALL BE FILLED WITH MORTAR MEETING THE REQUIREMENTS OF ODOT CMS ITEM 705.22.
8. BASE SHALL BE CAST-IN-PLACE CONCRETE MEETING ODOT CMS 499 FOR CLASS QC4 CONCRETE.
9. CORROSION PROTECTION SHALL BE REQUIRED WHEN RECEIVING PUMP STATION FLOWS OR AS DIRECTED BY THE SANITARY ENGINEER.
10. DOGHOUSE MANHOLES ARE NOT ALLOWED ON PVC PIPE. IN THIS CASE, PIPE MUST BE CUT AND A NEW MANHOLE INSTALLED PER Sa.S-3.



PRECAST CONCRETE MANHOLE, DOGHOUSE

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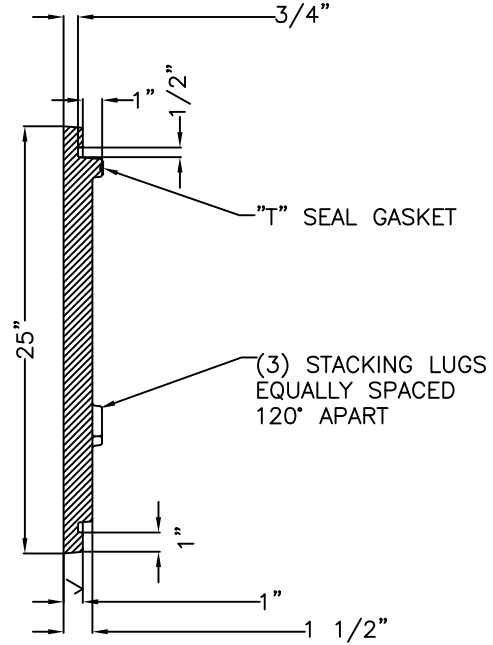
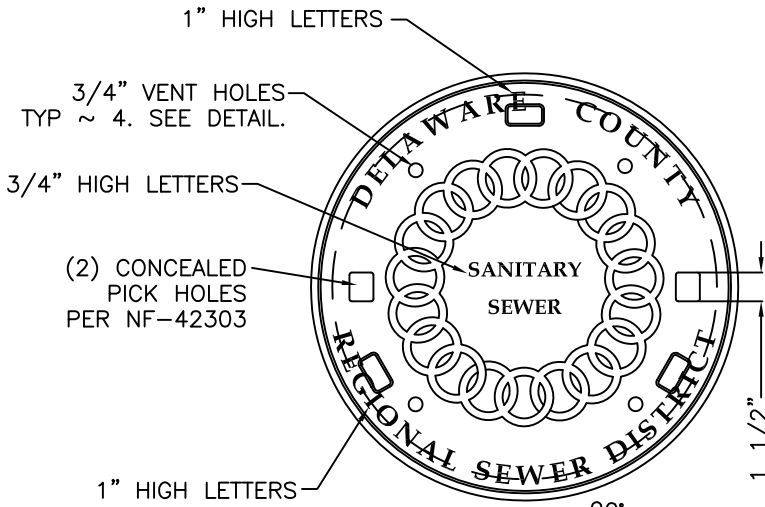
Sa.S-4

STANDARD
CONSTRUCTION
DRAWING

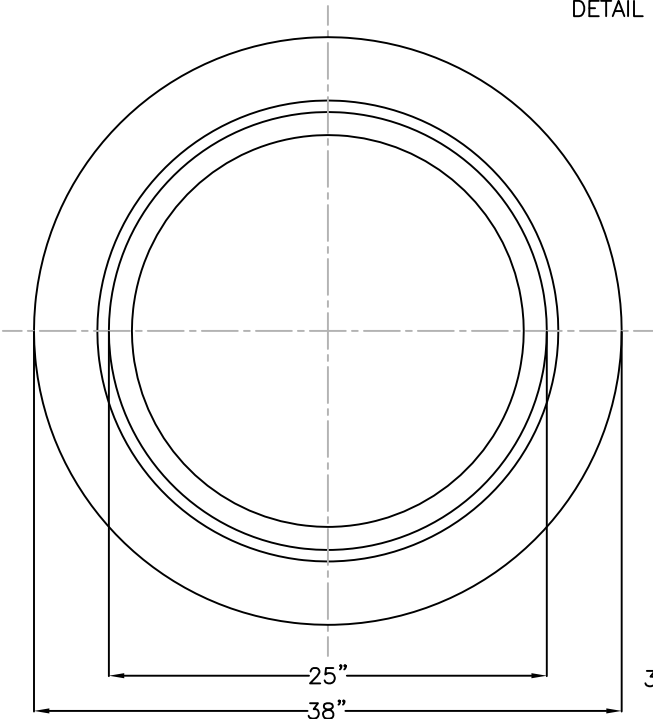
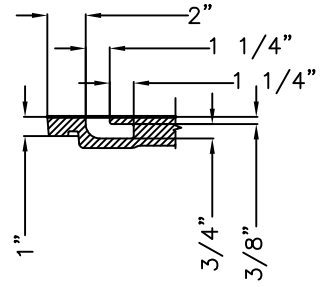
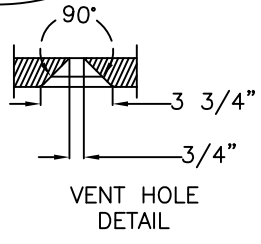
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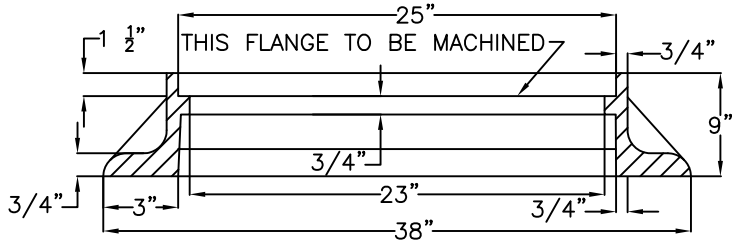
FRAMES AND COVER SHALL BE NEENAH R-1760A
WITH "T" SEAL GASKET OR EAST JORDAN 1665,
OR APPROVED EQUAL.



NOTE:
VENT HOLE DETAIL
NOT USED ON
WATERTIGHT LIDS.

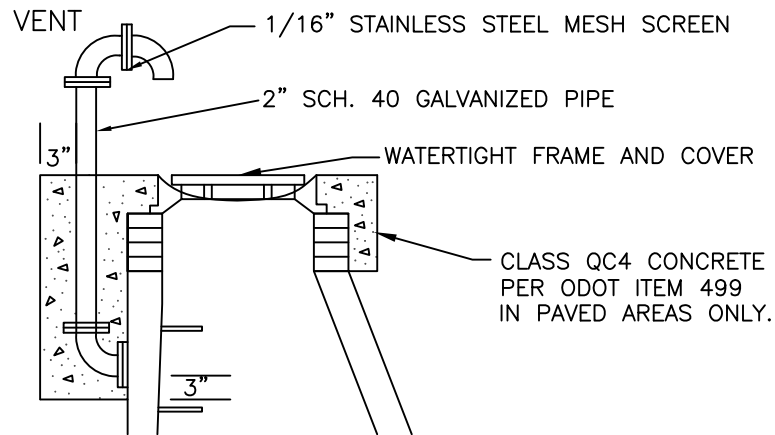
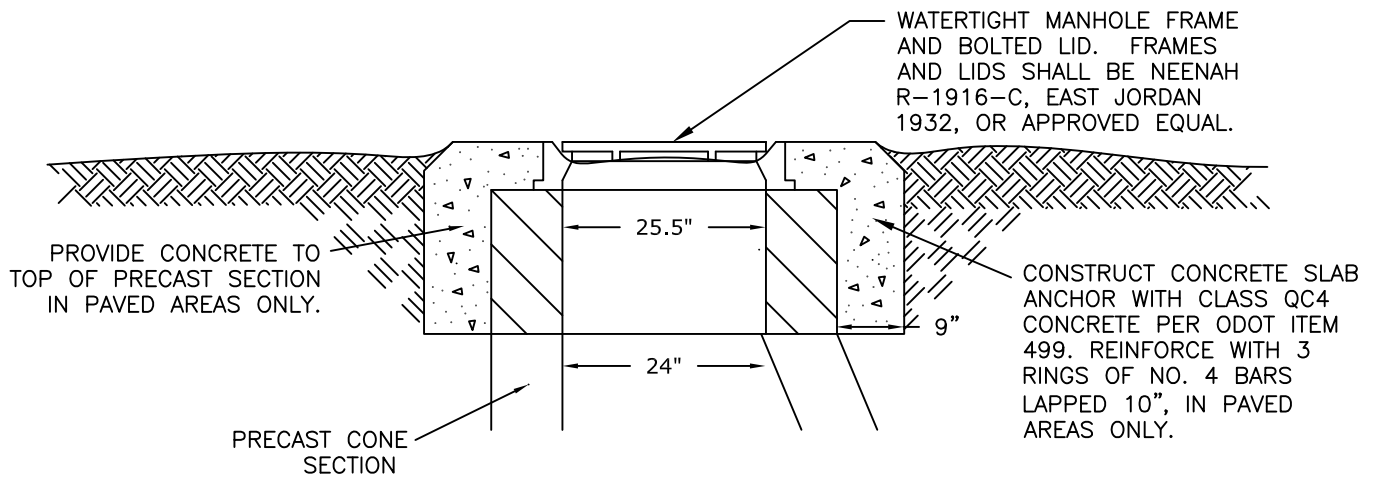


APPROXIMATE WEIGHT 125 lbs.



MANHOLE FRAME AND COVER CASTING

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DATE:	
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DRAWING NO. Sa.S-5	SHEET NO. 1 of 1



NOTE:
 WATERTIGHT MANHOLE CASTING TO BE USED AT THE DIRECTION OF THE SANITARY ENGINEER.



TYPICAL WATERTIGHT MANHOLE CASTING

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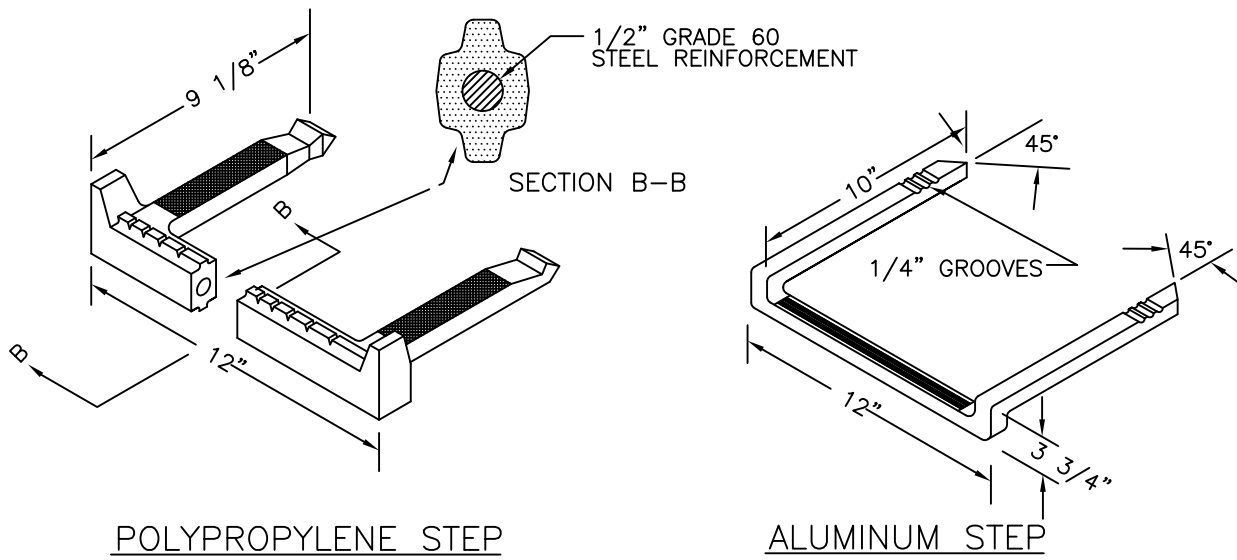
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Sa.S-6

STANDARD
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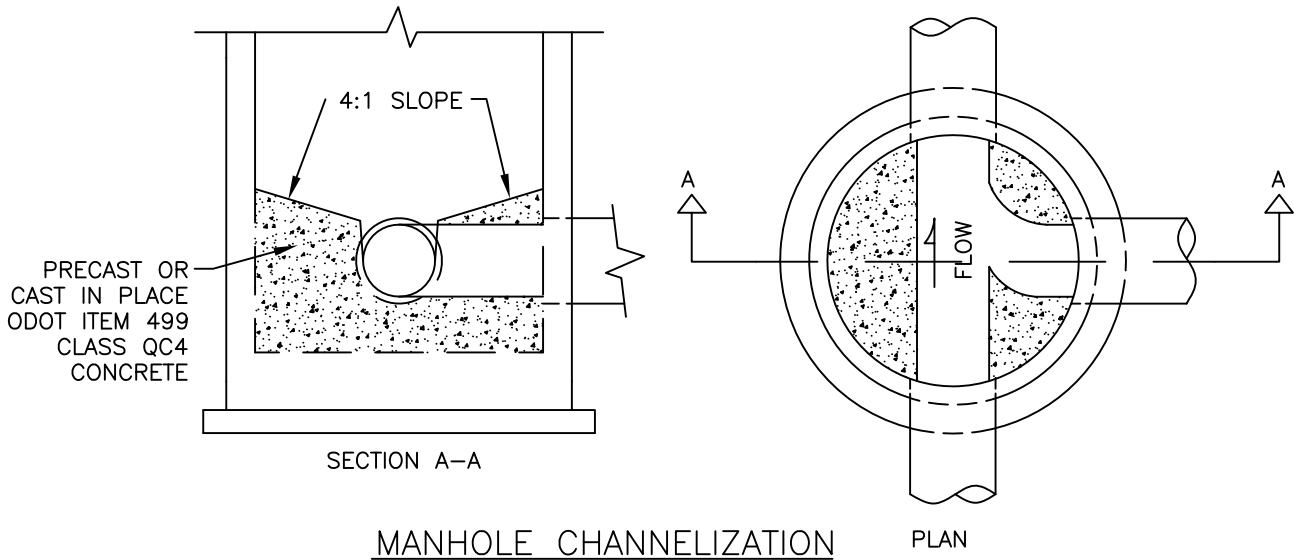
SHEET NO.

1 of 1



NOTES:

1. STEPS SHALL BE CAREFULLY DRIVEN INTO THE STRUCTURE BY PRESSURE OR VIBRATION BEFORE INITIAL SET OCCURS. CAST IN PLACE OR MORTARED WITH A NON-SHRINKING GROUT.
2. STEPS SHALL MEET THE REQUIREMENTS OF ASTM C478 AND BE NEW JERSEY ALUMINUM CO. F-14-10, ALCOA 16829, OR APPROVED EQUAL.
3. STEPS MAY NOT BE REQUIRED WHEN HEIGHT OF STRUCTURE IS 48" OR LESS.
4. MANHOLE STEP SPACING SHALL BE MINIMUM 12 INCHES AND MAXIMUM 16 INCHES BETWEEN STEPS.



MANHOLE STEPS AND CHANNEL

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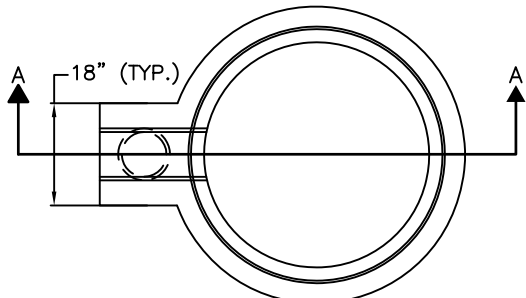
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Sa.S-7

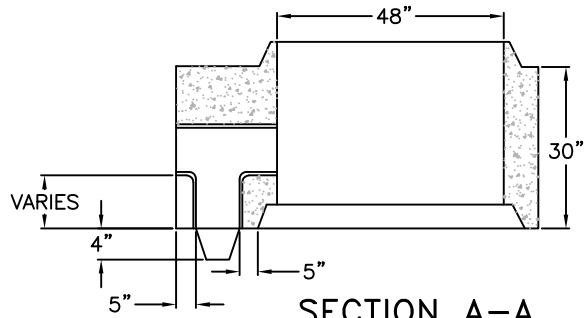
**STANDARD
CONSTRUCTION
DRAWING**

SHEET NO.

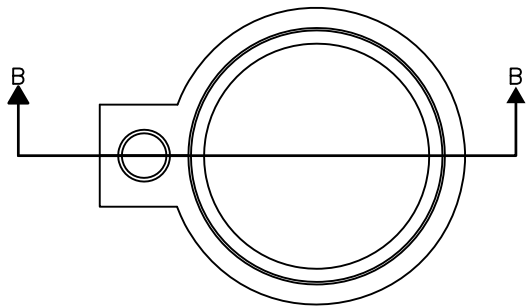
1 of 1



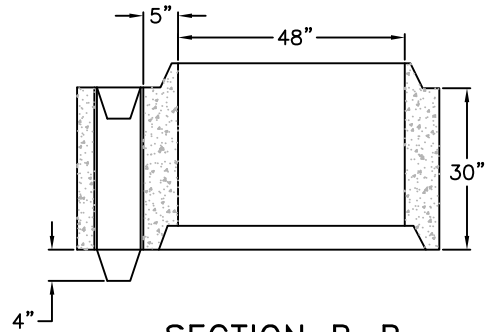
PRECAST DROP BARREL



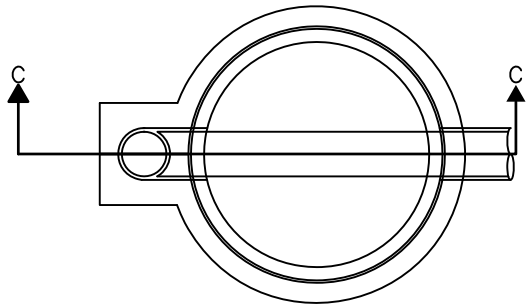
SECTION A-A



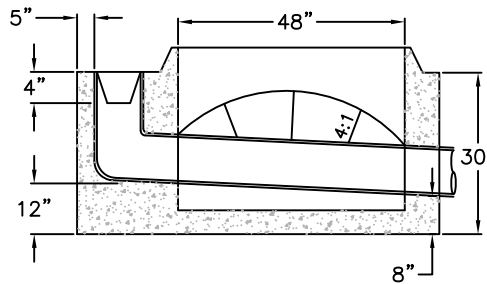
PRECAST CENTER DROP



SECTION B-B



PRECAST BASE DROP



SECTION C-C

NEW DROP MANHOLE

NOTES:

1. FOR SECTIONS ABOVE THE DROP BARREL SECTION, SEE Sa.S.-3.
2. SEWER PIPE SHALL BE SECURED THROUGH THE MANHOLE WALL BY KOR-N-SEAL BOOT OR APPROVED EQUIVALENT MEETING ASTM C 923.
3. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO ASTM C 478-70
4. FOR MANHOLE STEP SPACING AND DETAILS, SEE Sa.S.-3 AND Sa.S.-7.



**DROP PIPE
AT MANHOLE**

APPROVED:

DATE:

REVISION:

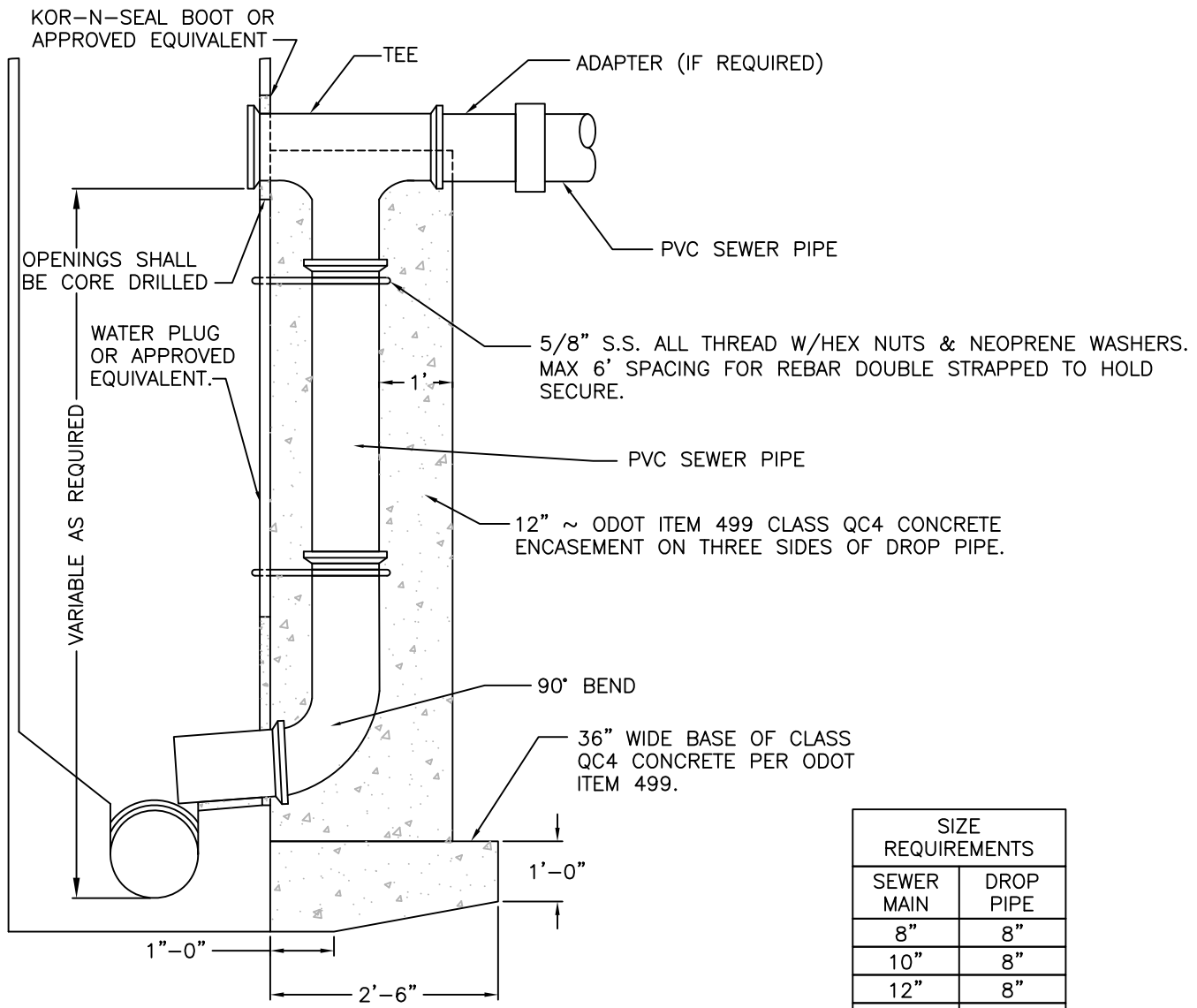
DRAWING NO.

Sa.S-8

**STANDARD
CONSTRUCTION
DRAWING**

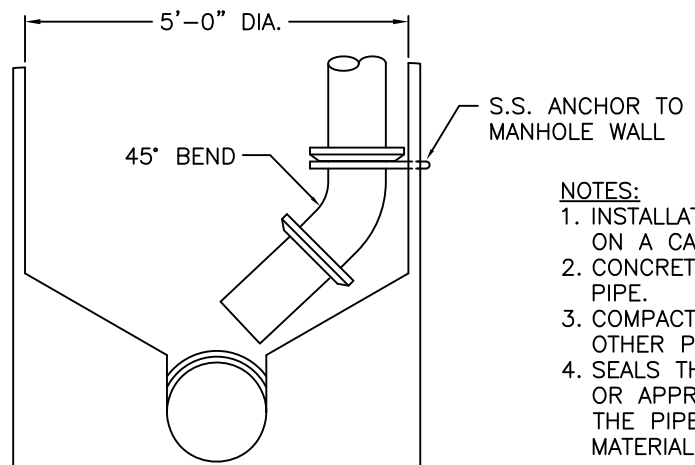
SHEET NO.

1 of 2



OUTSIDE DROP

SIZE REQUIREMENTS	
SEWER MAIN	DROP PIPE
8"	8"
10"	8"
12"	8"
14"	10"
15"	10"
16"	10"
18"	10"
21"	12"
24"	12"



INSIDE DROP

- NOTES:**
1. INSTALLATION MUST BE APPROVED BY THE SANITARY ENGINEER ON A CASE-BY-CASE BASIS.
 2. CONCRETE ENCASEMENT SHALL BE USED ONLY WITH CONCRETE PIPE.
 3. COMPACTED GRANULAR MATERIAL SHALL BE USED WITH ALL OTHER PIPE MATERIAL.
 4. SEALS THROUGH THE MANHOLE WALL SHALL BE WATER PLUG OR APPROVED EQUIVALENT FOR CONCRETE ENCASEMENT OR THE PIPE SEAL DESCRIBED IN Sa.S.-3 WHEN GRANULAR MATERIAL IS USED.



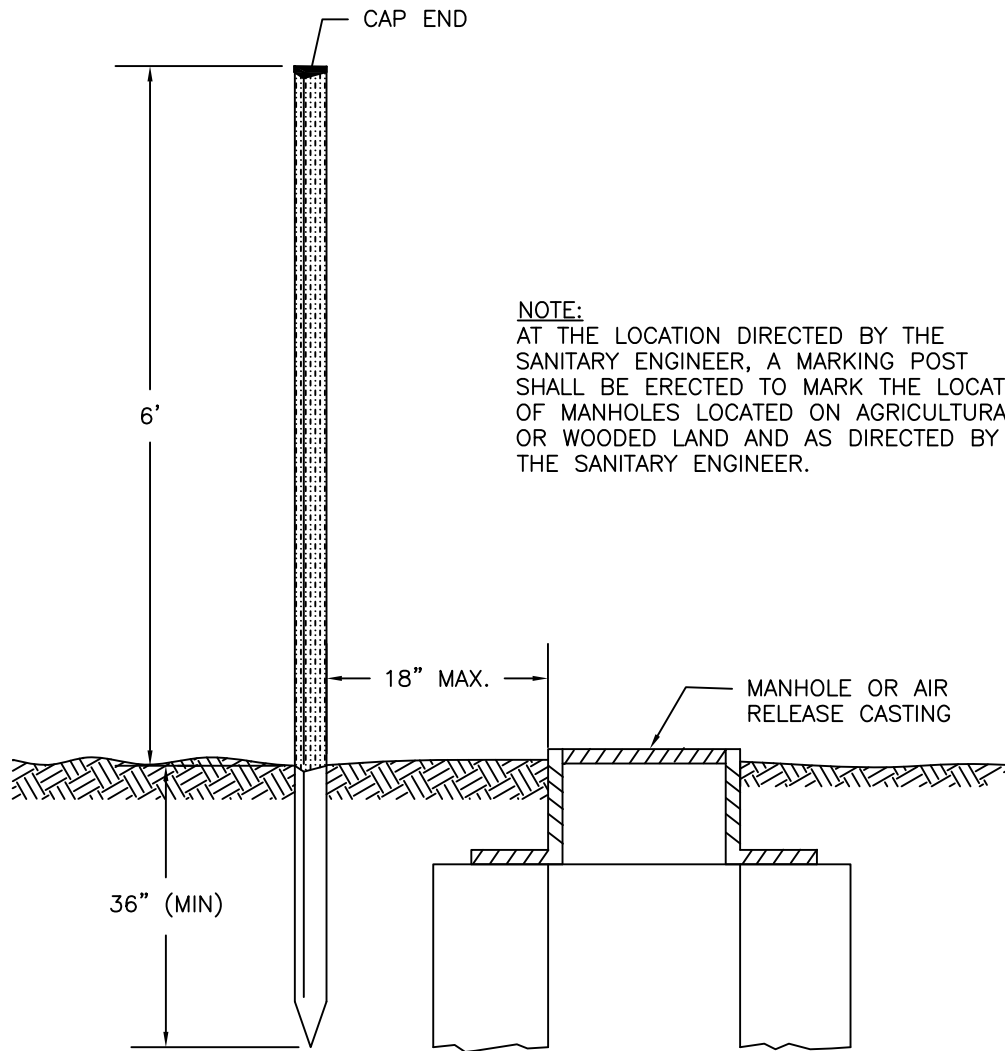
DROP PIPE AT MANHOLE

APPROVED:
DATE:
REVISION:

STANDARD CONSTRUCTION DRAWING

DRAWING NO.
Sa.S-8

SHEET NO.
2 of 2



NOTE:
 AT THE LOCATION DIRECTED BY THE SANITARY ENGINEER, A MARKING POST SHALL BE ERECTED TO MARK THE LOCATION OF MANHOLES LOCATED ON AGRICULTURAL OR WOODED LAND AND AS DIRECTED BY THE SANITARY ENGINEER.

EXTERIOR DESIGN: THE MARKER POST MUST BE GREEN IN COLOR AND TRIANGULAR IN SHAPE WITH EACH SIDE AT LEAST 3" WIDE. A 2 7/8" WIDE DECAL SHALL FIT ON EACH SIDE OF THE MARKER. DECALS SHALL BE PLACED ON ALL THREE FLAT SIDES TO ENSURE THAT A WARNING MESSAGE CAN BE SEEN FROM ANY DIRECTION.

FLEXIBLE STYLE: THE MARKER SHALL BE FLEXIBLE AND REBOUND IF HIT BY AN AUTOMOBILE. THE MARKER SHALL WITHSTAND A MINIMUM OF FIVE VEHICLE IMPACTS AT 45MPH.

WEATHERING STABILITY: THE MARKING POST SHALL NOT SIGNIFICANTLY FADE OR BECOME BRITTLE WHEN EXPOSED TO ULTRAVIOLET LIGHT FOR A MINIMUM OF TEN YEARS. THE MARKING POST SHALL BE TEMPERATURE STABLE FROM -40° TO +150°.

SOIL ANCHOR: SOIL ANCHORS SHALL BE GALVANIZED STEEL, 13" LONG (MIN.) AND HAVE PUNCH TABS WHICH LOCK INTO THE TRIANGULAR POST WHEN INSERTED IN THE ANCHOR. ANCHORS ARE TO BE INSTALLED FLUSH WITH THE GROUND SURFACE.

ACCEPTABLE MANUFACTURERS: RHINO TRIVIEW™ WITH SOIL ANCHOR OR APPROVED EQUAL.

DECAL: DETAILS SHALL BE APPROVED BY THE SANITARY ENGINEER PRIOR TO INSTALLATION.



TYPICAL MANHOLE/AIR RELEASE MARKING

APPROVED:

DATE:

REVISION:

DRAWING NO.

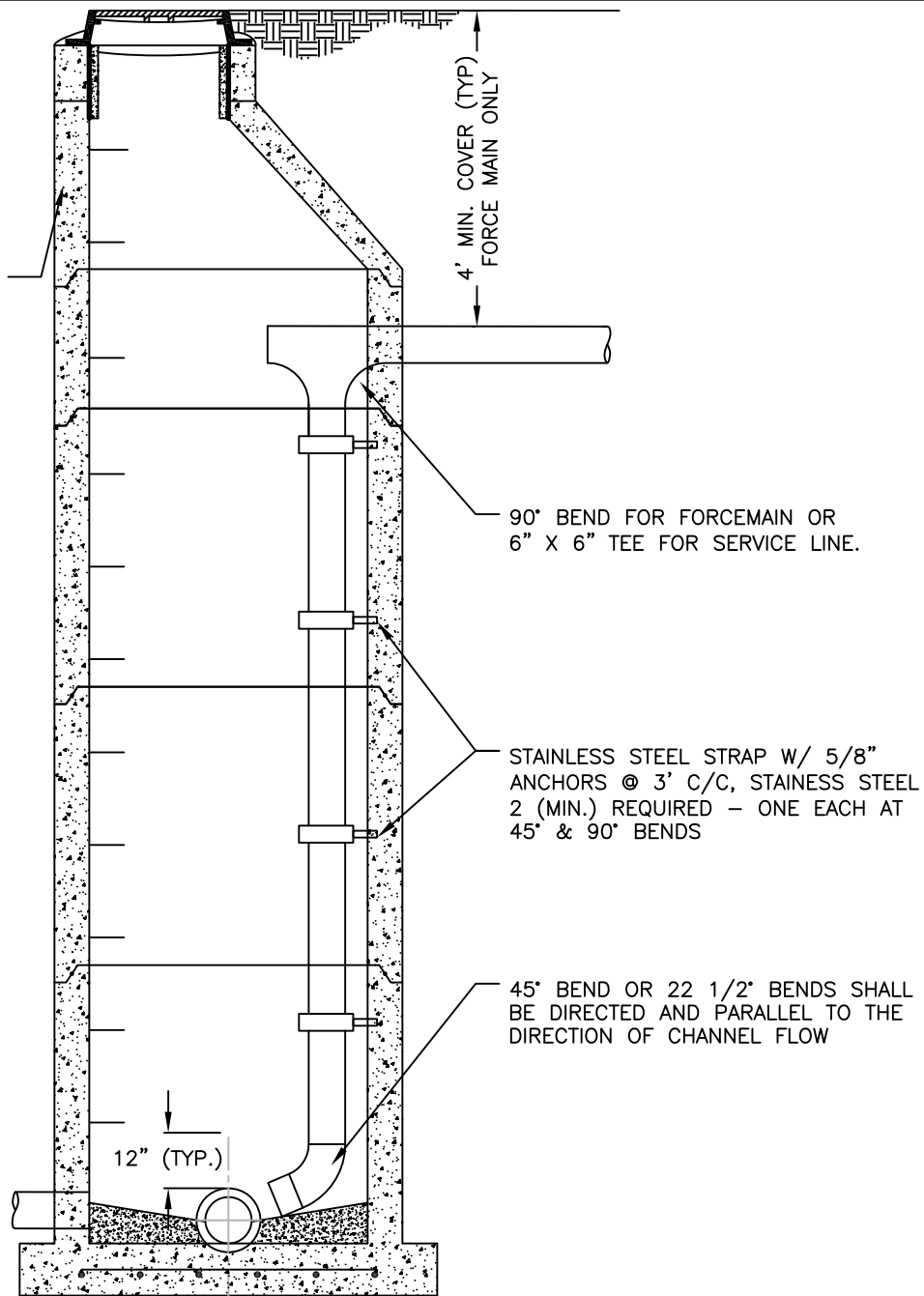
Sa.S-9

STANDARD
 CONSTRUCTION
 DRAWING

SHEET NO.

1 of 1

STD MANHOLE SECTION
SEE DRAWING Sa.S-3



NOTES:

1. INSTALLATION MUST BE APPROVED BY SANITARY ENGINEER.
2. FORCE MAIN OR SERVICE DROP PIPE SHALL IN NO WAY INTERFERE WITH THE STEPS OR OTHER ACCESS TO THE BOTTOM OF THE STRUCTURE.
3. THE VERTICAL SECTION OF PIPE SHALL BE ONE CONTINUOUS LENGTH.
4. PIPE SHALL BE PVC (ASTM 2241 SDR21) FOR FORCE MAIN WITH UNIFLANGE OR APPROVED EQUIVALENT AT ALL INTERIOR OR VERTICAL JOINTS OR PVC SDR35 D3034 FOR SERVICE LINE.
5. STRUCTURE PENETRATIONS SHALL BE WATERTIGHT WITH FLEXIBLE CONNECTION MEETING ASTM C 923.
6. WHEN CONNECTING FORCE MAIN OR SERVICE LINE TO AN EXISTING MANHOLE, THE WALL PENETRATION SHALL BE CORED.
7. AN INSIDE DROP ON SERVICE LINES IS ONLY REQUIRED IF THE PROPOSED CONNECTION IS 2 FEET OR GREATER ABOVE THE CHANNEL.
8. AN OUTSIDE DROP FOR FORCE MAINS LARGER THAN 6 INCHES SHALL BE REQUIRED IN ACCORDANCE WITH DRAWING Sa.S-8.
9. THE ENTIRE INSIDE SURFACE OF THE MANHOLE SHALL BE COATED WITH A CEMENTITIOUS OR EPOXY COATING AS REQUIRED BY DISTRICT.



FORCE MAIN AND SERVICE LINE DROP

APPROVED:

DATE:

REVISION:

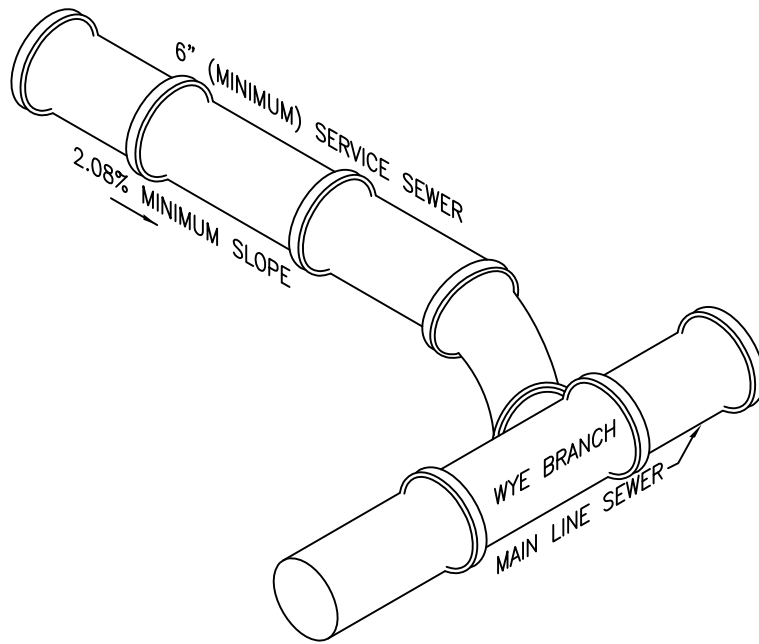
DRAWING NO.

Sa.S-10

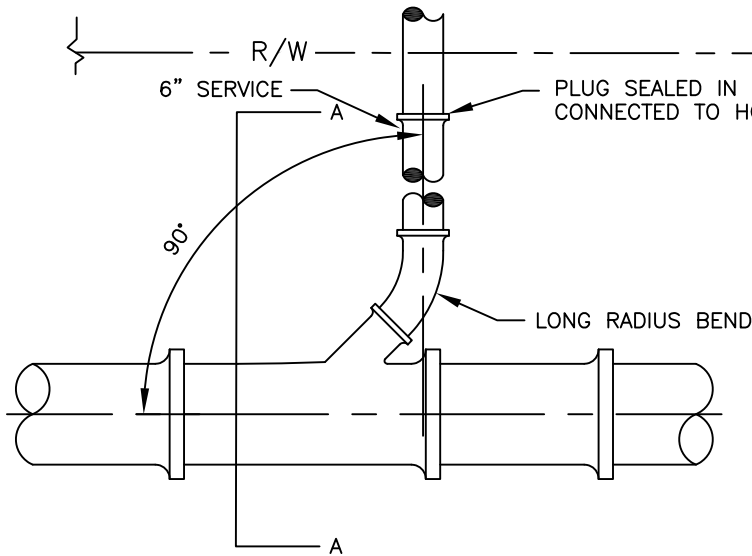
**STANDARD
CONSTRUCTION
DRAWING**

SHEET NO.

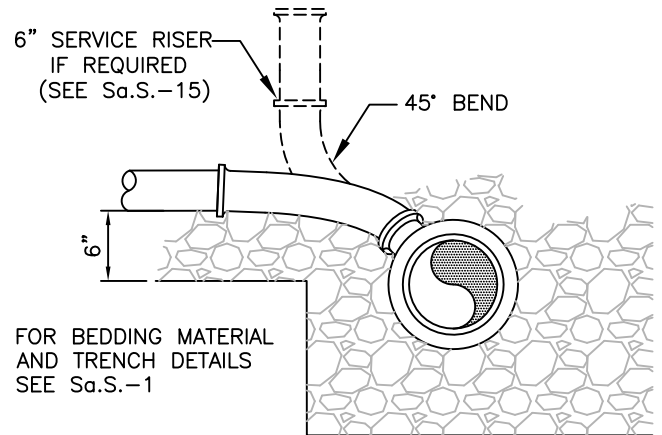
1 of 1



ISOMETRIC VIEW



PLAN VIEW



SECTION A-A



6" SANITARY SEWER
SERVICE
(MAIN LINE TO R/W)

APPROVED:

DATE:

REVISION:

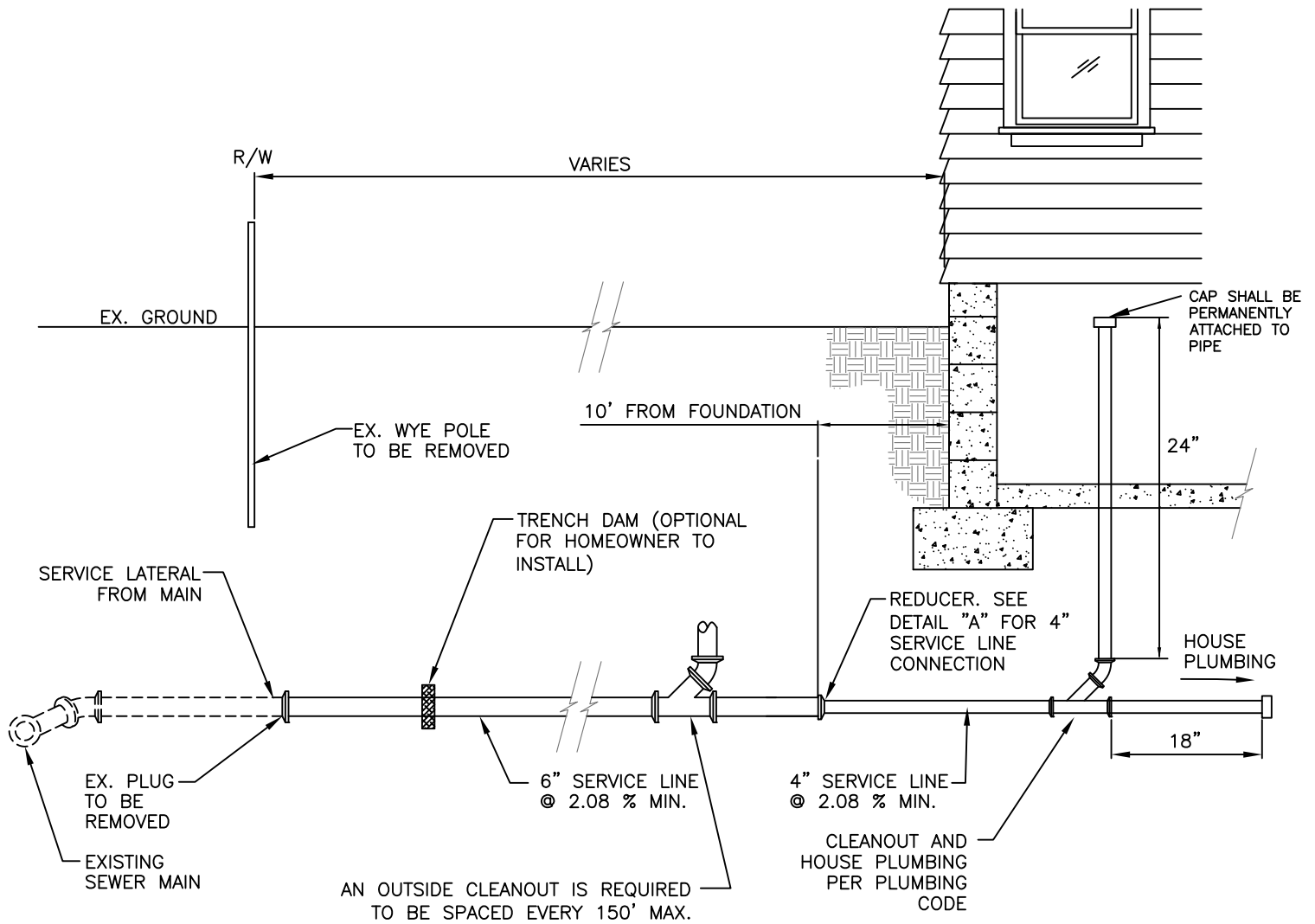
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Sa.S-11

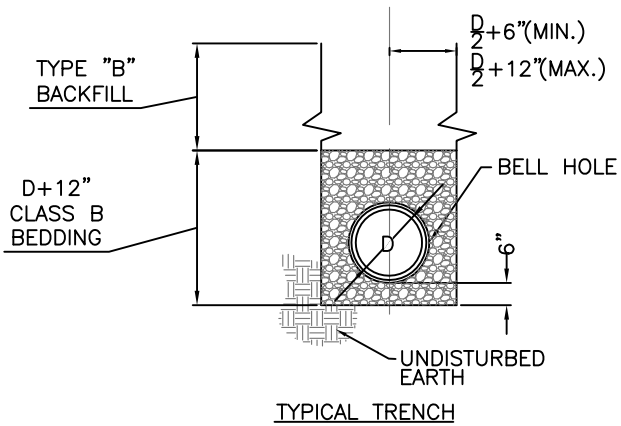
STANDARD
CONSTRUCTION
DRAWING

SHEET NO.

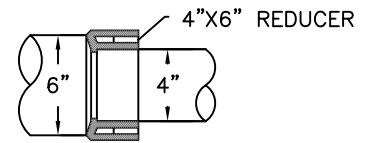
1 of 1



AN OUTSIDE CLEANOUT IS REQUIRED TO BE SPACED EVERY 150' MAX.



- NOTES:**
1. PIPE SHALL BE ASTM 3034 SDR 35 PVC MATERIAL.
 2. FITTINGS SHALL BE ASTM 3034 SDR 35 MATERIAL.



DETAIL A - SOLVENT WELD CONNECTION

NOTE: FERNCO FITTINGS AND SOLID REDUCERS ARE ALSO ACCEPTABLE.



6" SANITARY SEWER SERVICE (R/W TO BUILDING)

APPROVED:

DATE:

REVISION:

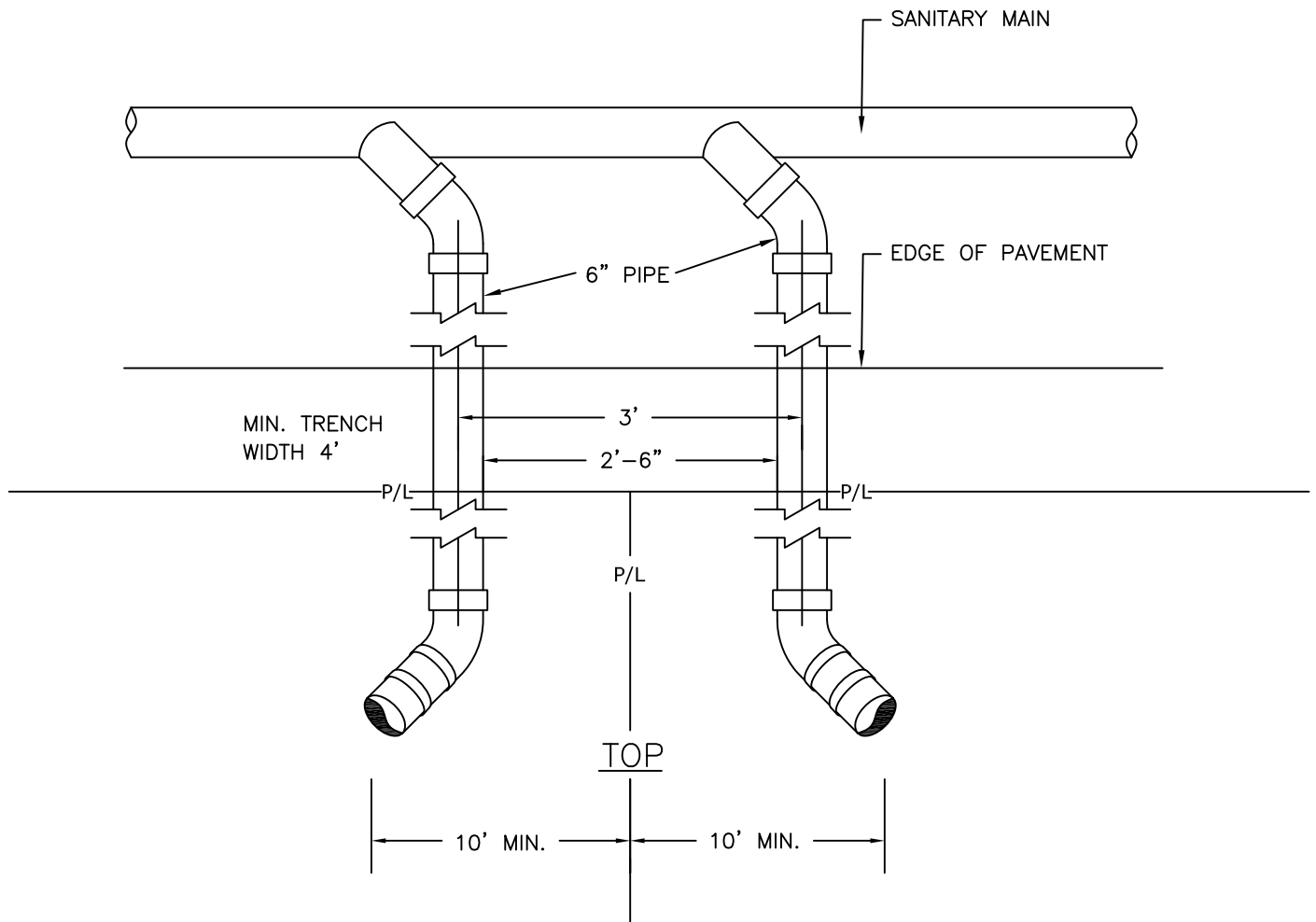
DRAWING NO.

Sa.S-12

STANDARD CONSTRUCTION DRAWING

SHEET NO.

1 of 1



NOTE:
 FOR USE ON STREET CROSSINGS AND LATERALS
 EXCEEDING 50' IN LENGTH TO LOTS OF 40' FRONTAGE
 OR LESS, OR WITH WRITTEN APPROVAL BY THE SANITARY
 ENGINEER.



OPTIONAL DUAL LATERAL EXTENSION

APPROVED:

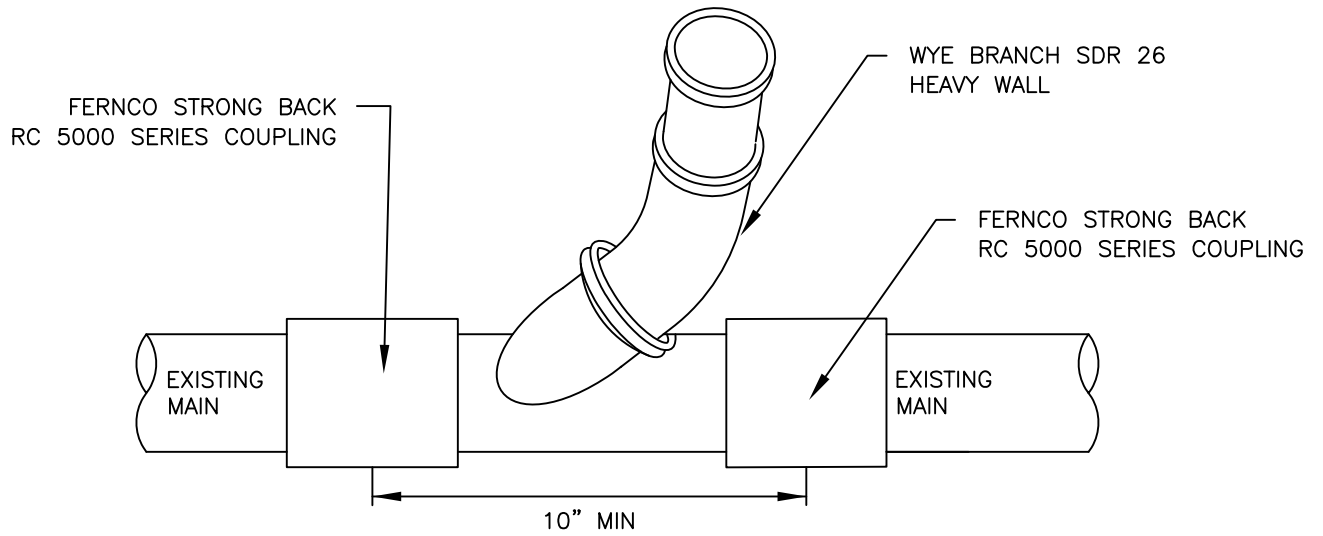
DATE:

REVISION:

DRAWING NO.
Sa.S-13

**STANDARD
 CONSTRUCTION
 DRAWING**

SHEET NO.
1 of 1



NOTES:

1. BYPASS PUMP OR PLUG UPSTREAM INVERT. CONDITIONS VARY AND APPROVAL BY SANITARY ENGINEER REQUIRED.
2. CUT OUT PIPE SECTION, INSTALL SDR 26 HEAVY WALL WYE BRANCH, BEVEL EDGES ON EXISTING PIPE. FERNCO HARD COUPLERS ARE REQUIRED FOR CONNECTION OF THE WYE TO THE MAIN LINE.
3. INSERTA-TEE'S ARE NOT ACCEPTABLE.
4. BEDDING AROUND CONNECTION SHALL BE PER Sa.S-1.



**SERVICE CONNECTION
FOR EXISTING
SANITARY SEWER PIPE**

APPROVED:

DATE:

REVISION:

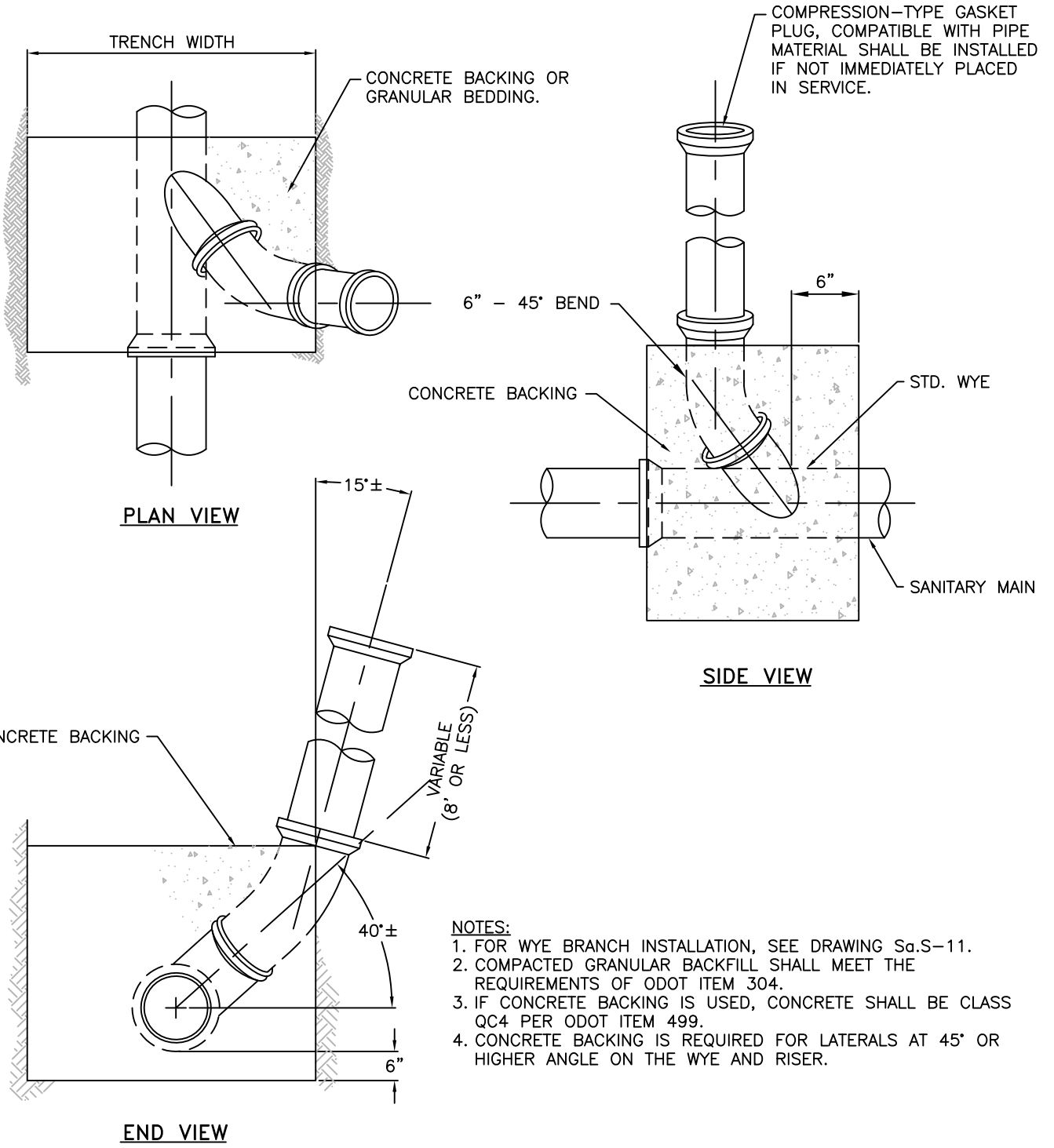
DRAWING NO.

Sa.S-14

**STANDARD
CONSTRUCTION
DRAWING**

SHEET NO.

1 of 1



TYPICAL RISER

APPROVED:

DATE:

REVISION:

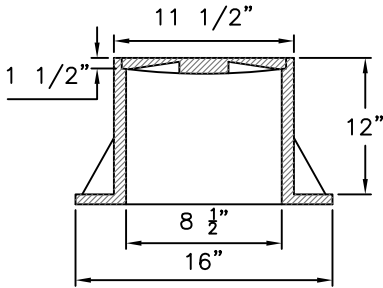
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Sa.S-15

STANDARD
CONSTRUCTION
DRAWING

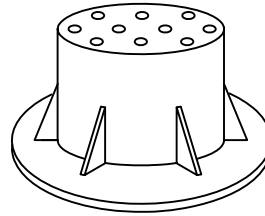
SHEET NO.

1 of 1



DIMENSIONS MAY VARY PER MANUFACTURER

SECTION VIEW



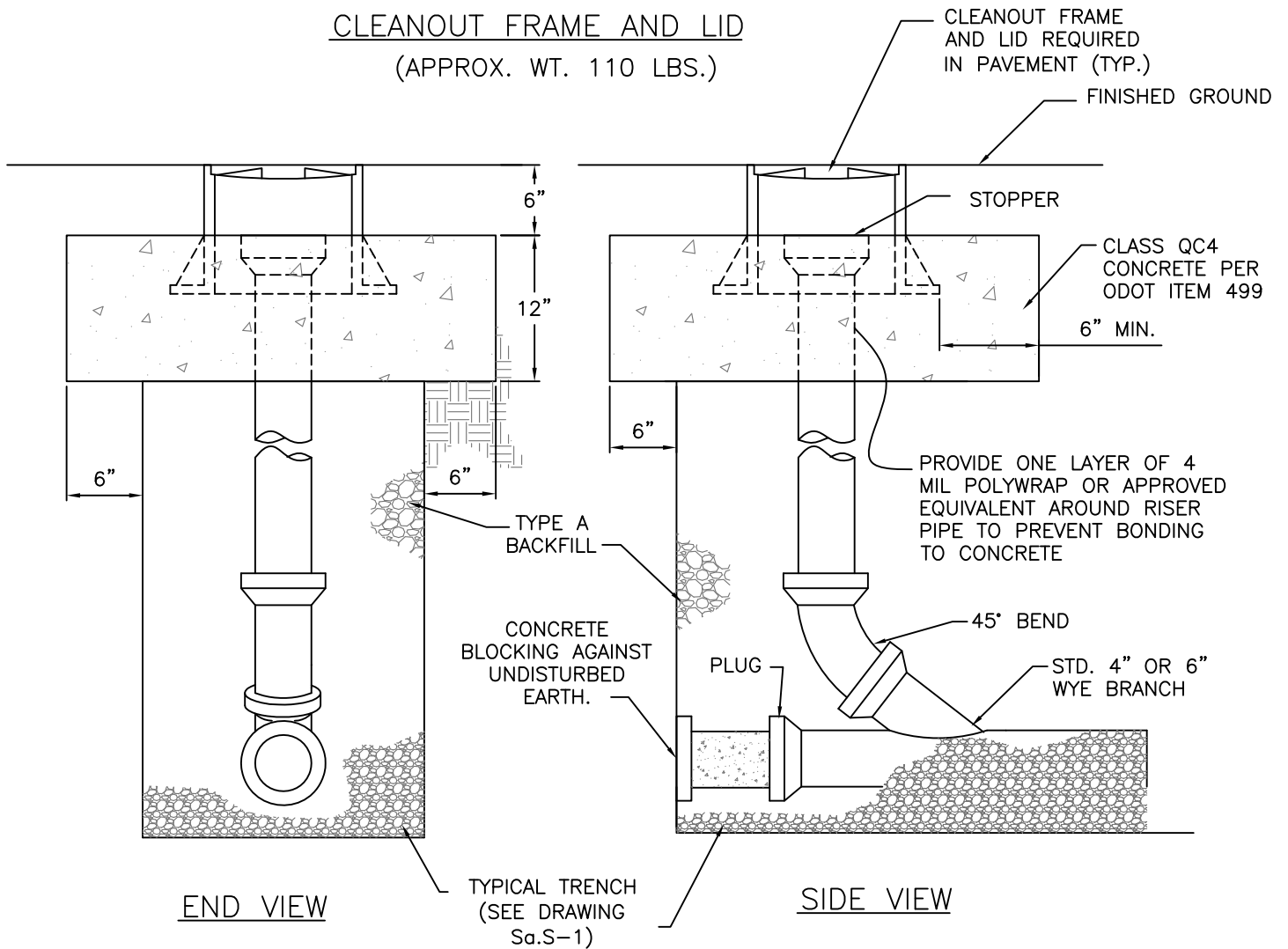
AXONOMETRIC VIEW

NOTES:

1. CLEANOUT FRAME AND LID SHALL BE NEENAH R-1977 OR APPROVED EQUIVALENT.
2. CLEANOUT TOP OF CASTING SHALL BE SET FLUSH WITH FINISHED GRADE.

CLEANOUT FRAME AND LID

(APPROX. WT. 110 LBS.)



END VIEW

TYPICAL TRENCH (SEE DRAWING Sa.S-1)

SIDE VIEW



TYPICAL CLEANOUT

APPROVED:

DATE:

REVISION:

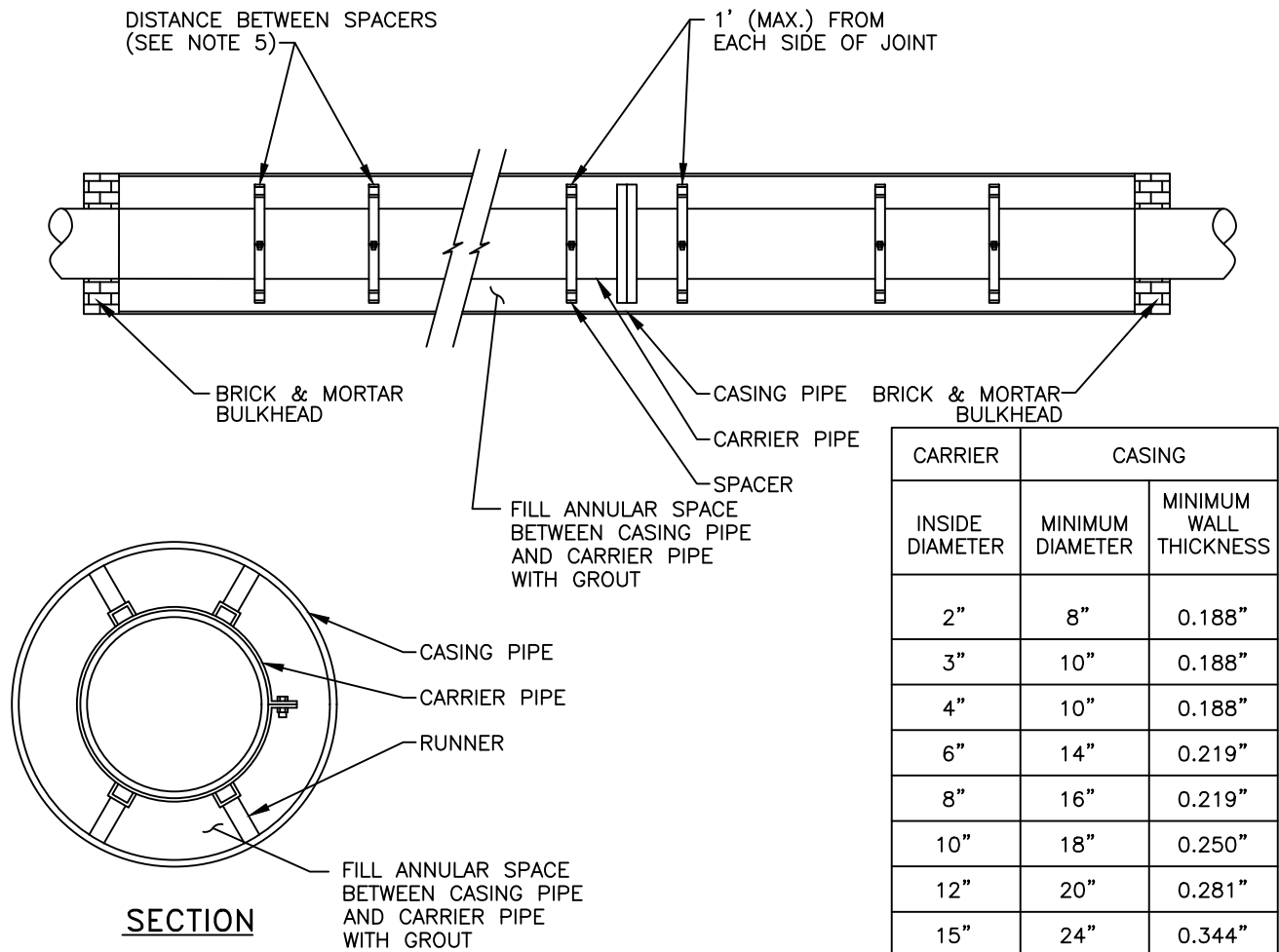
DRAWING NO.

Sa.S-16

STANDARD CONSTRUCTION DRAWING

SHEET NO.

1 of 1



CARRIER	CASING	
	INSIDE DIAMETER	MINIMUM WALL THICKNESS
2"	8"	0.188"
3"	10"	0.188"
4"	10"	0.188"
6"	14"	0.219"
8"	16"	0.219"
10"	18"	0.250"
12"	20"	0.281"
15"	24"	0.344"
16"	24"	0.344"
18"	28"	0.406"
20"	28"	0.406"
24"	36"	0.469"
27"	42"	0.500"
30"	42"	0.500"
36"	48"	0.675"

NOTES:

- CASING PIPE SHALL BE INSTALLED BY JACKING, WITH A MINIMUM WALL THICKNESS AS SHOWN IN THE TABLE.
- CASING SPACERS SHALL BE ADVANCE PRODUCTS & SYSTEMS, INC., SSI SERIES, OR APPROVED EQUIVALENT. CASING SPACERS MUST BE FULL PIPE FOR A TIGHT FIT BETWEEN CARRIER AND CASING PIPE.
- WHEN DUCTILE IRON PIPE IS USED, THE JOINTS SHALL BE RESTRAINED WITH FIELDLOK GASKETS OR APPROVED EQUIVALENT.
- WHEN PVC PIPE IS USED, THE JOINTS SHALL BE RESTRAINED WITH JCM SUR-GRIP RESTRAINERS OR APPROVED EQUIVALENT.
- DIMENSIONS BETWEEN SPACERS FOR PVC PIPE SHALL BE 6 FEET MAXIMUM. DIMENSIONS BETWEEN SPACERS FOR DUCTILE IRON PIPE SHALL BE 8 FEET MAXIMUM.
- FILL ANNULAR SPACE WITH GROUT MEETING THE REQUIREMENTS OF ODOT ITEM 613.
- THE QUANTITY OF RUNNERS IS IN ACCORDANCE WITH THE SIZE OF THE CARRIER PIPE AS FOLLOWS:
 TO 14" DIA. - 4 RUNNERS
 16" TO 36" DIA. - 6 RUNNERS
 38" TO 48" DIA. - 8 RUNNERS



CASING PIPE

APPROVED:

DATE:

REVISION:

DRAWING NO.

Sa.S-17

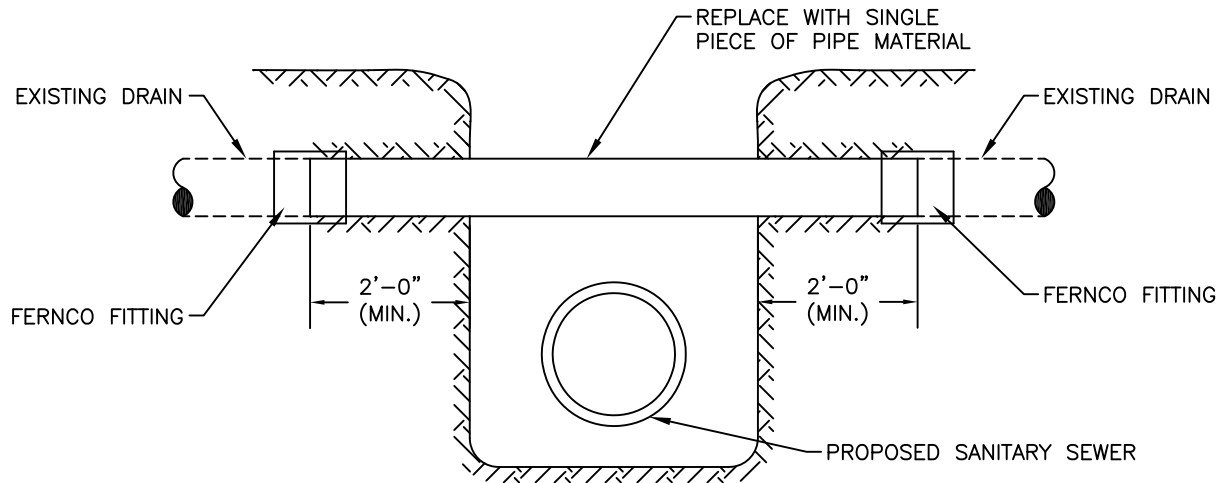
**STANDARD
CONSTRUCTION
DRAWING**

SHEET NO.

1 of 1

MINIMUM ROAD AND CURB UNDERDRAIN
 REPLACEMENT MATERIAL SHALL BE:
 PERFORATED CONCRETE: ODOT ITEM 706.06
 CONCRETE DRAIN TILE: ODOT ITEM 706.07
 VITRIFIED CLAY: ODOT ITEM 706.08
 PERFORATED PVC: ODOT ITEM 707.41
 HEAVY DUTY CORRUGATED POLYETHYLENE
 SLOTTED DRAIN: ODOT ITEM 707.33

MINIMUM DRAIN TILE REPLACEMENT MATERIAL SHALL
 BE:
 PVC: ASTM 2241, SDR 21 OR SDR 35 D3034.
 POLYETHYLENE: ODOT ITEM 707.33



NOTE:

1. INSIDE DIAMETER OF REPLACEMENT PIPE SHALL BE EQUAL TO OR GREATER THAN INSIDE DIAMETER OF EXISTING TILE OR UNDERDRAIN.
2. REPLACEMENT MATERIAL USED SHALL BE EQUAL TO OR BETTER THAN THE EXISTING TILE OR UNDERDRAIN AS DIRECTED BY THE SANITARY ENGINEER.
3. PROVIDE FERNCO FITTING OR APPROVED EQUIVALENT WHERE EXISTING TILE OR UNDERDRAIN HAS WATERTIGHT JOINTS. PROVIDE 30# FELT OR CONCRETE MORTAR OVER THE UPPER HALF OF THE JOINT WHERE OPEN JOINTS ARE ENCOUNTERED.
4. BACKFILL BETWEEN SANITARY SEWER PIPE AND REPLACEMENT TILE OR UNDERDRAIN SHALL BE GRANULAR BACKFILL.
5. SANITARY SEWER SHALL BE INSTALLED IN ACCORDANCE WITH DRAWINGS Sa.S-1 AND Sa.S-2.



DRAIN TILE AND UNDERDRAIN REPLACEMENT

APPROVED:

DATE:

REVISION:

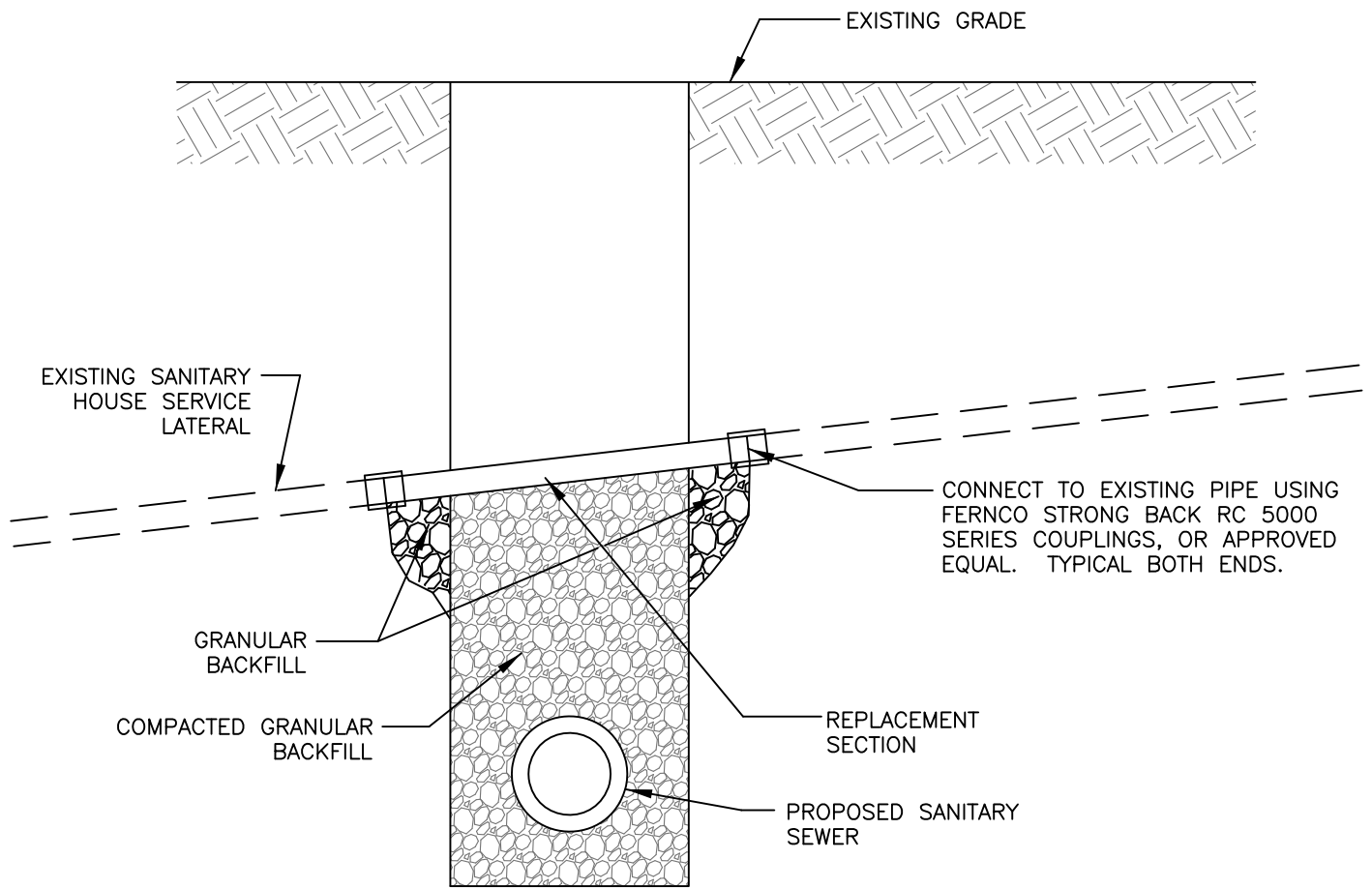
DRAWING NO.

Sa.S-18

**STANDARD
 CONSTRUCTION
 DRAWING**

SHEET NO.

1 of 1



HOUSE SANITARY SERVICE REPLACEMENT

APPROVED:

DATE:

REVISION:

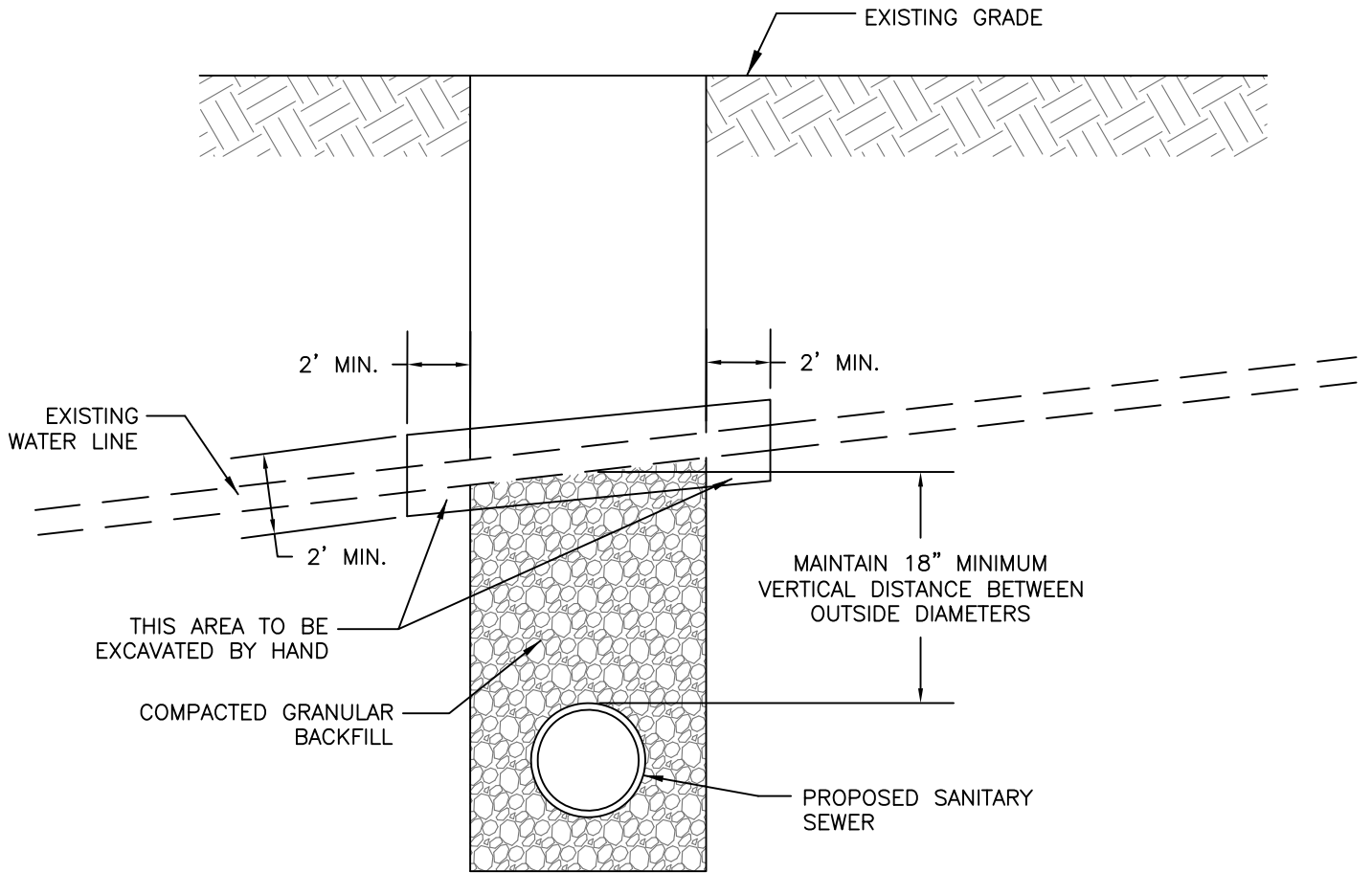
DRAWING NO.

Sa.S-19

STANDARD
CONSTRUCTION
DRAWING

SHEET NO.

1 of 1



NOTE:

1. CONTRACTOR SHALL PROTECT EXISTING UTILITIES DURING EXCAVATION.
2. IF 18" VERTICAL CLEARANCE IS NOT MET, THEN CASING PIPE IS REQUIRED ON THE WATERLINE PER Sa.S-17.
3. CONTRACTOR SHALL HAND DIG AROUND WATERLINE.



WATERLINE CROSSING

APPROVED:

DATE:

REVISION:

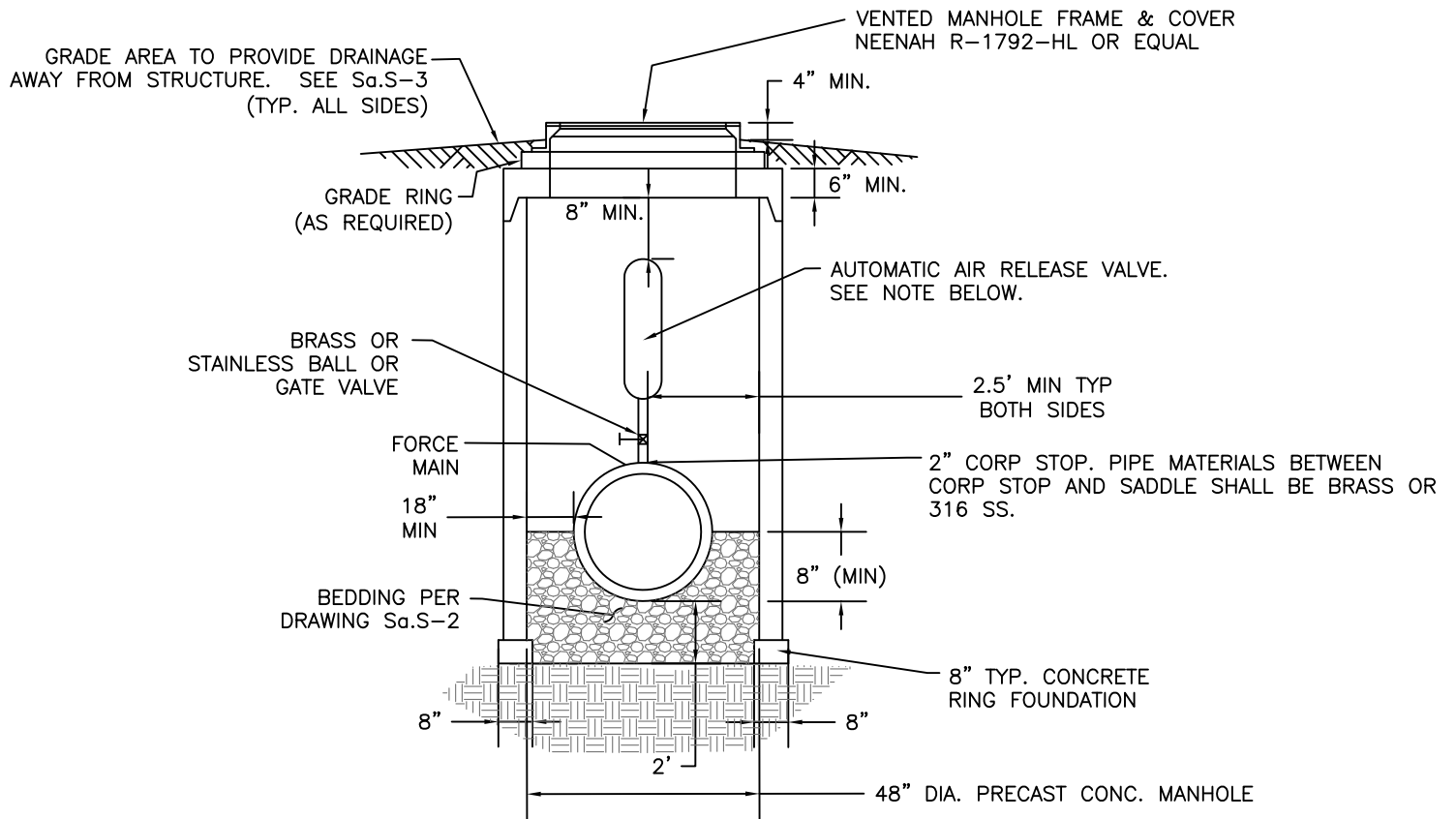
DRAWING NO.

Sa.S-20

**STANDARD
CONSTRUCTION
DRAWING**

SHEET NO.

1 of 1



NOTE:
 THE AIR RELEASE VALVE SHALL BE AN AUTOMATIC SEWAGE AIR VALVE WITH A 2" INLET & BACK FLUSHING ACCESSORIES. VALVE AND ASSEMBLY SHALL BE VENT-O-MAT MODEL #050RGX1021.



TYPICAL AUTOMATIC AIR RELEASE VALVE

APPROVED:

DATE:

REVISION:

DRAWING NO.

Sa.S-21

STANDARD
CONSTRUCTION
DRAWING

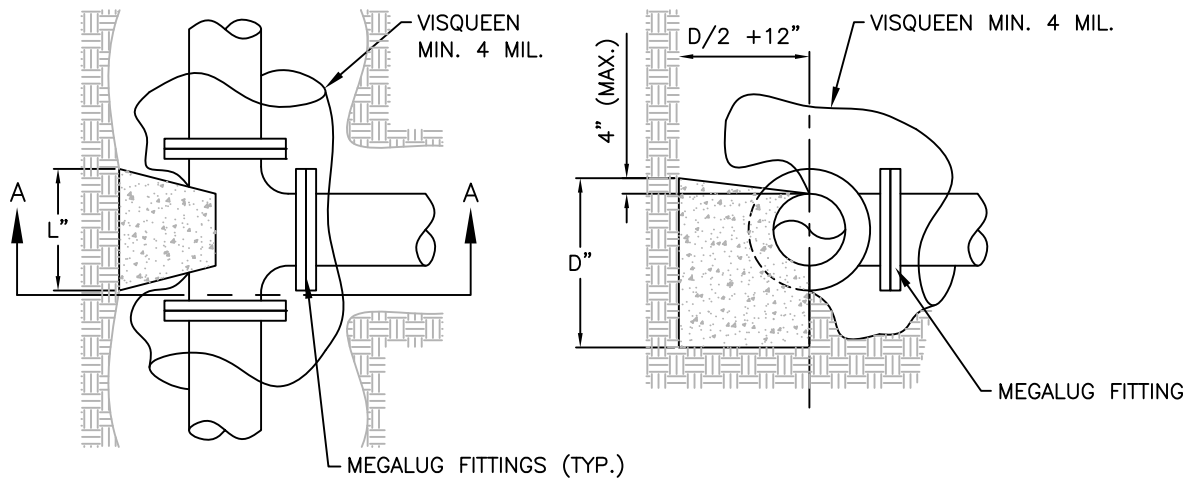
SHEET NO.

1 of 1

RUN	BRANCH											
	3"			4"			6"			8"		
	L	D	V	L	D	V	L	D	V	L	D	V
3"	12	5	0.5									
4"	10	6	0.5	11	8	0.8						
6"	9	7	0.5	11	8	0.8	18	12	1.9			
8"	8	8	0.5	10	9	0.7	18	12	1.9	23	16	3.5
12"	6	12	0.6	8	12	0.8	18	12	1.9	23	16	3.5
16"	6	16	0.8	6	16	0.8	14	16	2.0	20	18	3.3
20"	6	20	1.0	6	20	1.0	11	20	1.9	18	20	3.3
24"	6	24	1.2	6	24	1.2	9	24	1.9	15	24	3.3

RUN	BRANCH											
	12"			16"			20"			24"		
	L	D	V	L	D	V	L	D	V	L	D	V
3"												
4"												
6"												
8"												
12"	38	22	8.7									
16"	36	23	8.7	49	30	13.6						
20"	35	24	8.7	46	32	13.6	60	38	26.5			
24"	30	28	8.7	42	36	14.0	54	42	26.3	68	48	45.4

V = VOLUME OF CONCRETE IN CUBIC FEET



PLAN VIEW

SECTION A-A

NOTES:

1. CONCRETE FOR BACKING SHALL BE CLASS QC4 PER ODOT ITEM 499.
2. BACKING SHALL BE DESIGNED FOR 3000 PSF SOIL BEARING.
3. REINFORCING STEEL SHALL BE USED AS DIRECTED BY THE SANITARY ENGINEER.
4. CONCRETE SHALL BE PLACED AGAINST UNDISTURBED EARTH.
5. PROVIDE CLEARANCE FOR REMOVAL OF BOLTS.
6. VISQUEEN SHALL BE PLACED IN A MANNER SUCH THAT CONCRETE BLOCKING DOES NOT HAVE DIRECT CONTACT WITH TEE AND OR FITTINGS.
7. FORCE MAIN PIPE CONNECTIONS SHALL BE RESTRAINED USING MEGALUG FITTINGS.



BACKING FOR TEES

APPROVED:

DATE:

REVISION:

DRAWING NO.

Sa.S-22

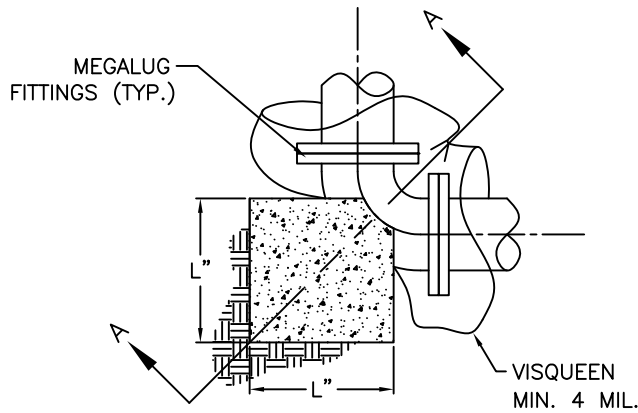
STANDARD
CONSTRUCTION
DRAWING

SHEET NO.

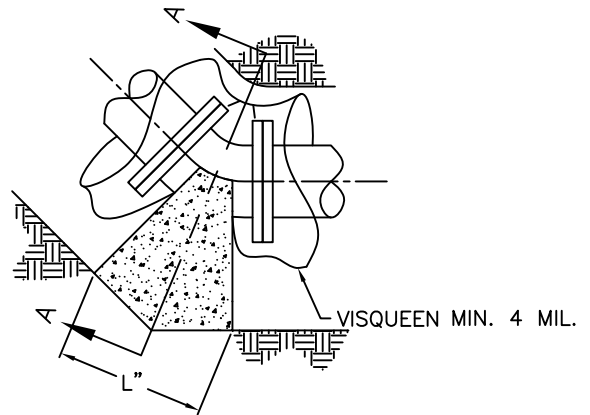
1 of 1

PIPE SIZE	DEGREE OF BEND											
	11 1/4°			22 1/2°			45°			90°		
	L	D	V	L	D	V	L	D	V	L	D	V
3"	4	3	0.1	6	4	0.2	10	4	0.3	10	4	0.3
4"	5	4	0.2	9	5	0.4	14	5	0.6	14	5	0.6
6"	8	6	0.5	12	7	0.7	20	8	1.4	18	9	1.7
8"	9	8	0.7	16	9	1.4	24	12	2.7	25	11	4.0
12"	14	12	1.8	24	14	3.6	36	18	6.8	32	18	10.7
16"	18	16	3.4	32	18	6.7	36	32	13.4	41	26	25.4
20"	25	20	6.4	30	30	11.5	49	36	20.5	50	32	46.5
24"	27	24	9.0	39	34	18.4	60	42	35.0	58	40	77.7

V = VOLUME OF CONCRETE IN CUBIC FEET



90° BENDS

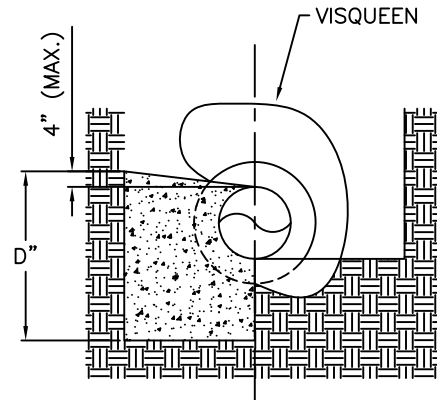


BENDS LESS THAN 90°

PLAN VIEWS

NOTES:

1. CONCRETE FOR BACKING SHALL BE CLASS QC4 PER ODOT ITEM 499.
2. BACKING SHALL BE DESIGNED FOR 3000 PSF SOIL BEARING.
3. REINFORCING STEEL SHALL BE USED AS DIRECTED BY THE SANITARY ENGINEER.
4. CONCRETE SHALL BE PLACED AGAINST UNDISTURBED EARTH.
5. PROVIDE CLEARANCE FOR REMOVAL OF BOLTS.
6. VISQUEEN SHALL BE PLACED IN A MANNER SUCH THAT CONCRETE BLOCKING DOES NOT HAVE DIRECT CONTACT WITH TEE AND OR FITTINGS.
7. FORCE MAIN PIPE CONNECTIONS SHALL BE RESTRAINED USING MEGALUG FITTINGS.



SECTION A-A



BACKING FOR BENDS

APPROVED:

DATE:

REVISION:

DRAWING NO.

Sa.S-23

STANDARD CONSTRUCTION DRAWING

SHEET NO.

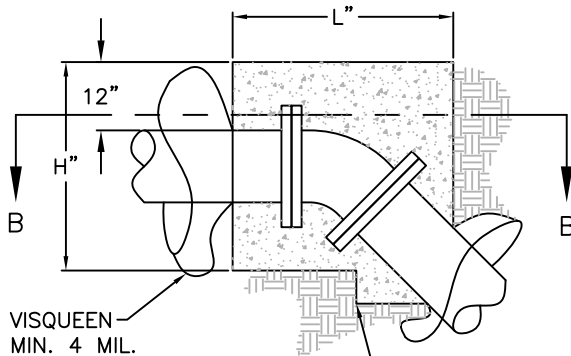
1 of 1

PIPE SIZE	DEGREE OF BEND															
	11 1/4°				22 1/2°				45°				90°			
	L	W	H	V	L	W	H	V	L	W	H	V	L	W	H	V
3"	12	18	12	1.5	13	25	16	3.0	18	30	19	5.9	25	30	24	10.4
4"	12	24	16	2.6	16	30	18	5.0	22	36	24	11.0	27	48	25	18.7
6"	12	48	18	6.0	15	43	36	13.4	30	55	24	22.9	37	54	36	41.6
8"	12	63	24	10.5	18	57	34	20.2	36	57	33	39.2	47	60	46	75.0
12"	20	54	36	22.6	37	62	37	49.0	48	62	51	87.9	66	66	66	166.4
16"	31	65	38	44.3	60	65	39	88.1	65	65	65	159.2	72	96	72	288.0
20"	45	70	40	72.8	56	70	60	136.2	72	76	78	247.0	86	108	84	451.8
24"	41	72	54	92.3	67	74	69	198.0	88	84	84	359.1	96	120	96	640.0

V = VOLUME OF CONCRETE IN CUBIC FEET

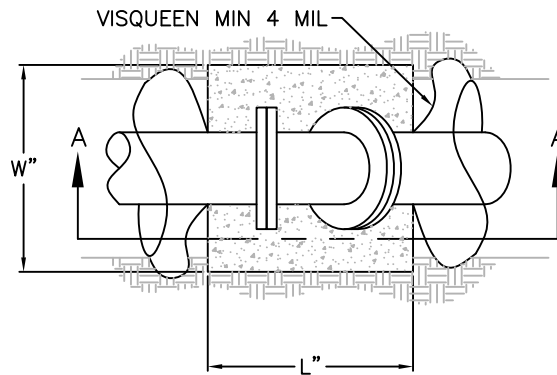
NOTES:

1. CONCRETE FOR BACKING SHALL BE CLASS QC4 PER ODOT ITEM 499.
2. BACKING SHALL BE DESIGNED FOR 3000 PSF SOIL BEARING.
3. REINFORCING STEEL SHALL BE USED AS DIRECTED BY THE SANITARY ENGINEER.
4. CONCRETE SHALL BE PLACED AGAINST UNDISTURBED EARTH.
5. BACKING SHALL BE CENTERED HORIZONTALLY ON BEND.
6. ANY PIPE WHICH COMES IN CONTACT WITH THE CONCRETE ENCASEMENT SHALL BE DUCTILE IRON.
7. PROVIDE CLEARANCE FOR REMOVAL OF BOLTS.
8. VISQUEEN SHALL BE PLACED IN A MANNER SUCH THAT CONCRETE BLOCKING DOES NOT HAVE DIRECT CONTACT WITH TEE AND OR FITTINGS.
9. FORCE MAIN PIPE CONNECTIONS SHALL BE RESTRAINED USING MEGALUG FITTINGS.



STEP BACKER IF NECESSARY TO OBTAIN HORIZONTAL BEARING.

SECTION A-A



SECTION B-B



BACKING FOR VERTICAL BENDS (OVER BENDS ONLY)

APPROVED:

DATE:

REVISION:

DRAWING NO.

Sa.S-24

STANDARD CONSTRUCTION DRAWING

SHEET NO.

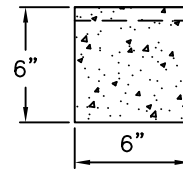
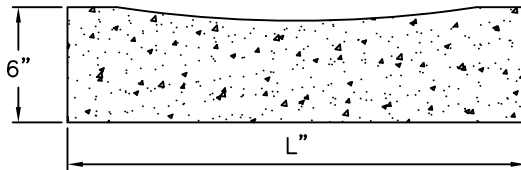
1 of 1

	SIZE	L	V
GATE VALVES	3"	15	0.31
	4"	16	0.33
	6"	17	0.36
	8"	20	0.42
	12"	24	0.50
	16"	30	0.63
BUTTERFLY VALVES	20"	36	0.75
	24"	42	0.88
	30"	48	1.00

V = VOLUME OF CONCRETE IN CUBIC FEET

NOTES:

1. CONCRETE FOR SUPPORTS SHALL BE CLASS QC4 PER ODOT ITEM 499.
2. BACKING SHALL BE DESIGNED FOR 300 PSF SOIL BEARING.
3. CONCRETE SHALL BE PLACED AGAINST UNDISTURBED EARTH.
4. PROVIDE CLEARANCE FOR REMOVAL BOLTS.



CONCRETE VALVE SUPPORTS

APPROVED:

DATE:

REVISION:

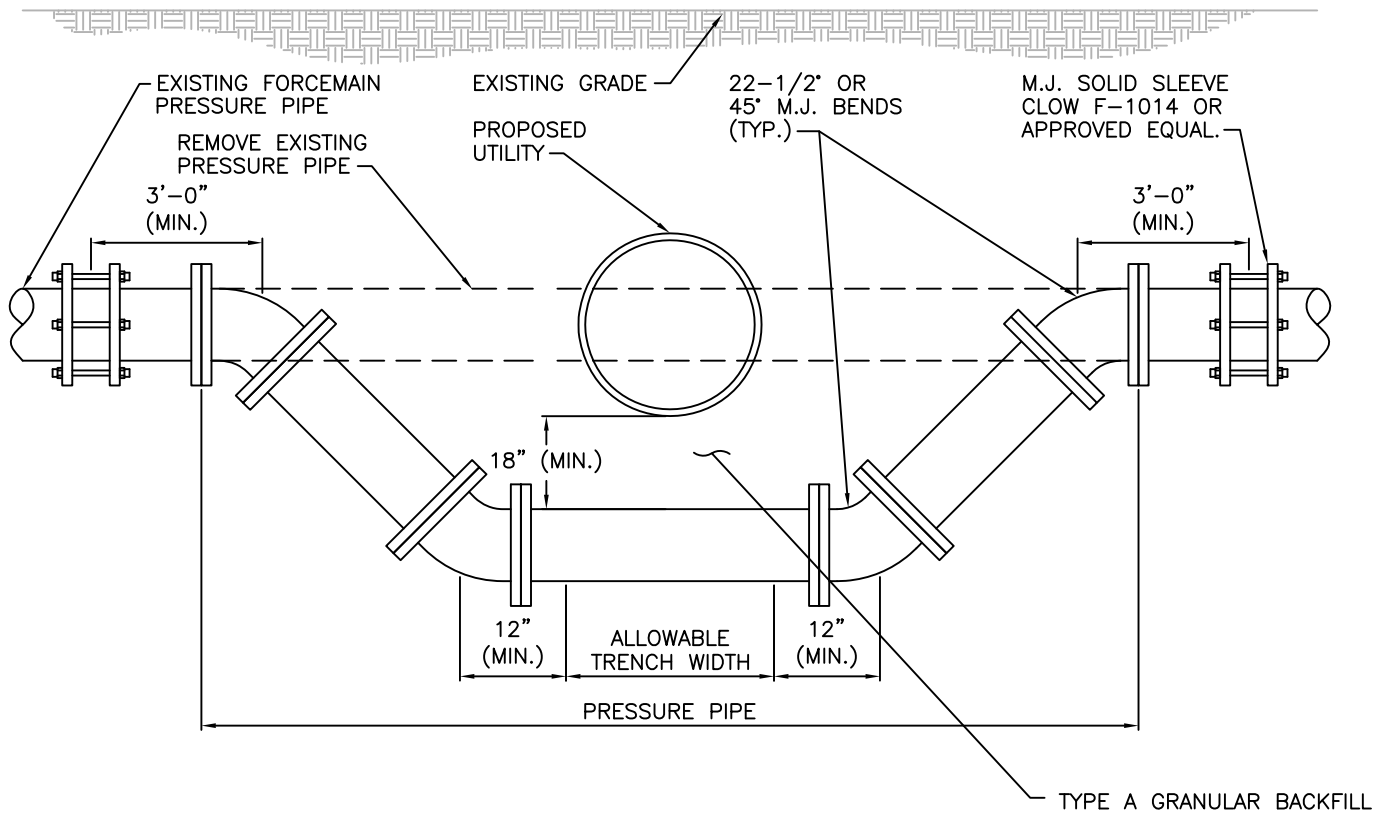
DRAWING NO.

Sa.S-25

STANDARD CONSTRUCTION DRAWING

SHEET NO.

1 of 1



NOTES:

1. TIME AND DURATION OF SHUTDOWN SHALL BE DETERMINED OR APPROVED BY THE SANITARY ENGINEER.
2. THE CONTRACTOR SHALL NOTIFY ANY CUSTOMERS AFFECTED BY THE PROPOSED WORK AT LEAST 48 HOURS IN ADVANCE OF SHUTDOWN.
3. ALL BENDS SHALL BE SECURED BY RESTRAINING GLANDS (MEGALUG), RODDING, OR OTHER METHODS AS APPROVED BY THE SANITARY ENGINEER TO RESTORE MAIN SERVICE AS SOON AS POSSIBLE.
4. THE RELOCATED LINES SHALL BE LAID TO THE NEW LINE AND GRADE AND TESTED AS REQUIRED PRIOR TO THE SHUTDOWN OF EXISTING MAIN AND CONNECTION OF THE RELOCATED LINES TO THE EXISTING MAIN.
5. CONCRETE BLOCKING FOR BENDS SHALL BE PER Sa.S-23 AND Sa.S-24.
6. CONCRETE ENCASEMENT OF FORCE MAIN SHALL BE REQUIRED IF LESS THAN 18" VERTICAL CLEARANCE CANNOT BE MAINTAINED BETWEEN FORCE MAIN AND EXISTING UTILITY.



**TYPICAL
FORCEMAIN
PRESSURE PIPE
LOWERING**

APPROVED:

DATE:

REVISION:

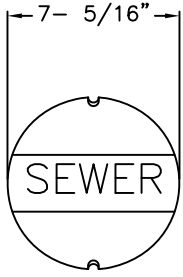
DRAWING NO.

Sa.S-26

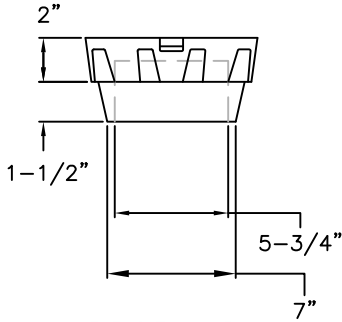
**STANDARD
CONSTRUCTION
DRAWING**

SHEET NO.

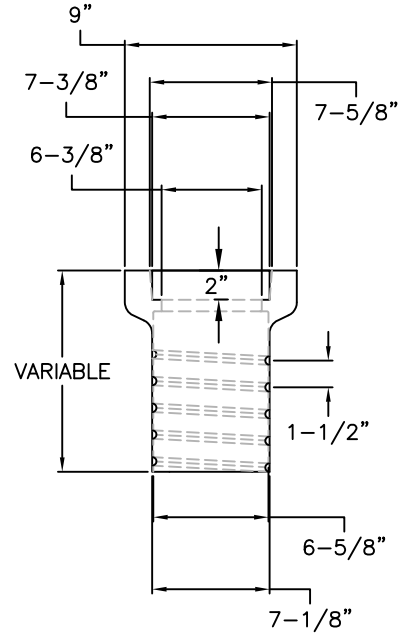
1 of 1



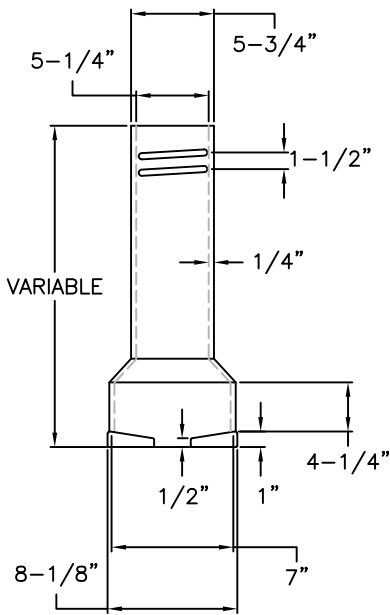
NOTE:
VALVE BOXES FOR SEWER
LINES SHALL BE MARKED AS
"SEWER" ON VALVE BOX LID.



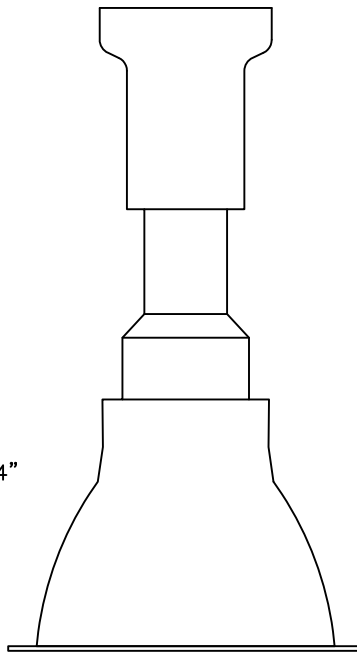
DROP LID



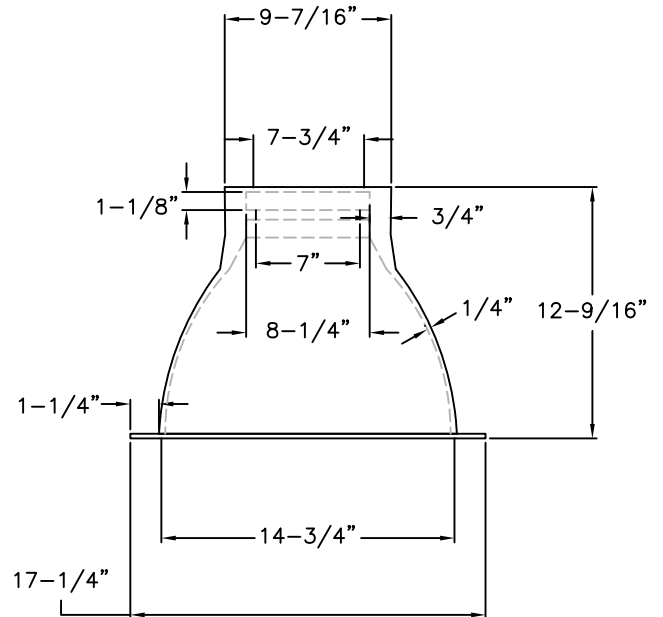
TOP



BOTTOM



BOX COMPLETE



BASE

NOTE:
STANDARD VALVE BOX SHALL BE USED FOR INSTALLATIONS WHERE TRACER WIRE IS
BROUGHT TO THE GROUND SURFACE FOR FORCE MAIN LOCATING.



STANDARD VALVE BOX

APPROVED:

DATE:

REVISION:

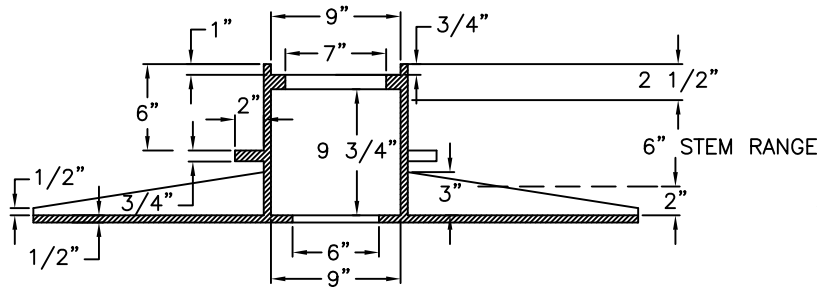
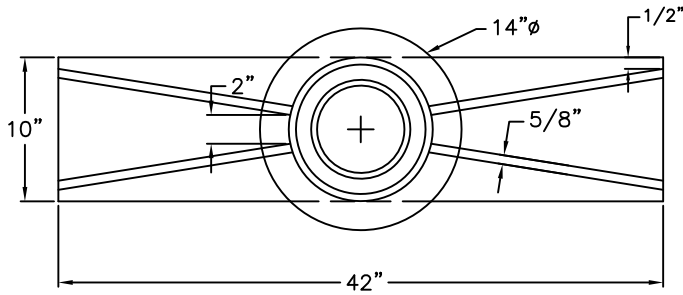
DRAWING NO.

Sa.S-27

STANDARD
CONSTRUCTION
DRAWING

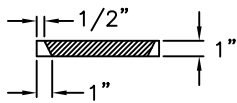
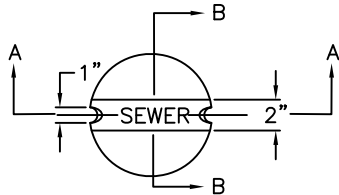
SHEET NO.

1 of 1

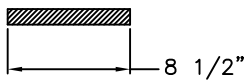


VALVE BOX
133 LBS.

NOTE:
VALVE BOXES FOR SEWER
LINES SHALL BE MARKED AS
"SEWER" ON VALVE BOX LID.

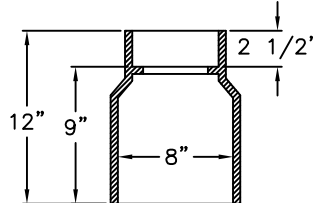
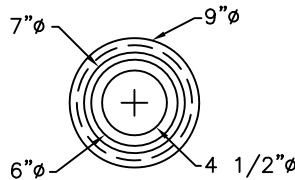


SECTION AA

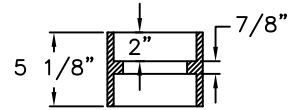
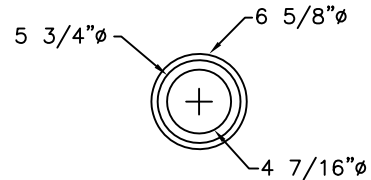


SECTION BB
VALVE BOX LID
15 LBS.

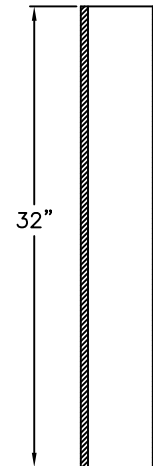
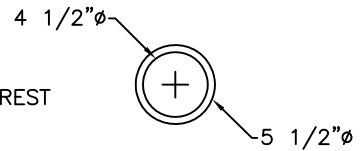
NOTE:
AVERAGE WEIGHTS ARE TO THE NEAREST
EVEN POUND CALCULATED USING
0.26 LBS. PER CUBIC INCH.



VALVE BOX BASE
41 LBS.



VALVE STEM SLEEVE
14 LBS.



VALVE STEM
65 LBS.

NOTE:
STANDARD VALVE BOX SHALL BE USED FOR INSTALLATIONS WHERE TRACER WIRE IS
BROUGHT TO THE GROUND SURFACE FOR FORCE MAIN LOCATING.



**HEAVY DUTY
VALVE BOX
(TRAFFIC RATED)**

APPROVED:

DATE:

REVISION:

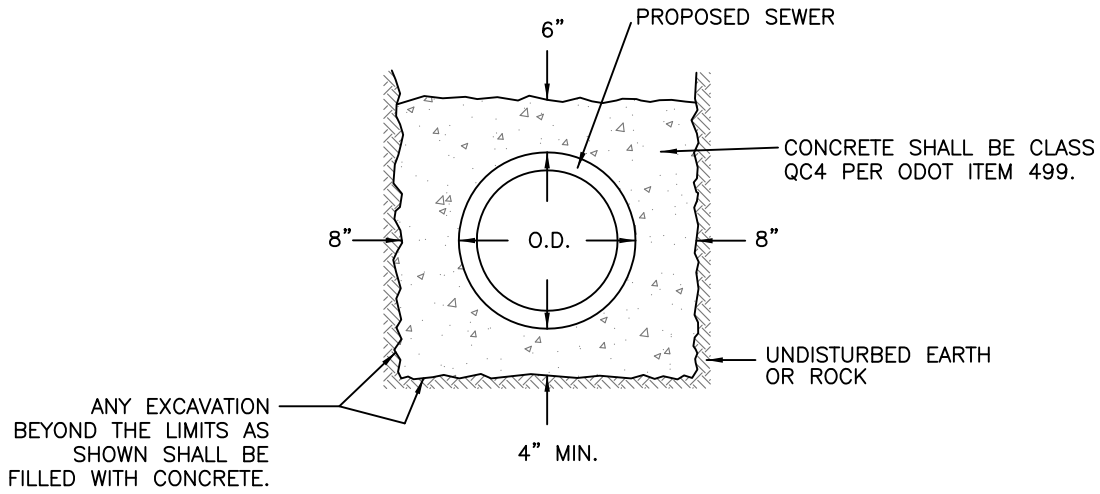
DRAWING NO.

Sa.S-28

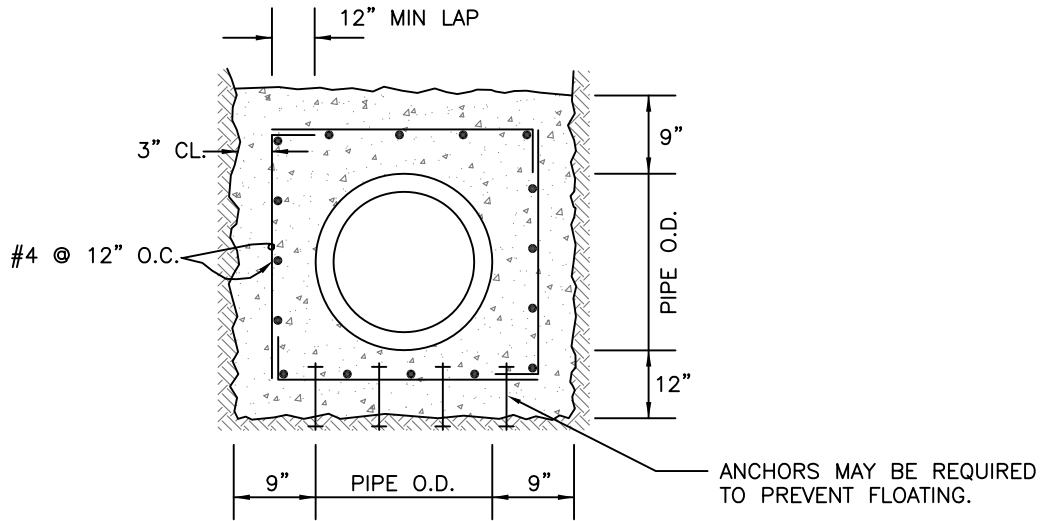
**STANDARD
CONSTRUCTION
DRAWING**

SHEET NO.

1 of 1



CONCRETE ENCASEMENT



REINFORCED CONCRETE ENCASEMENT

NOTES:

1. THE ENCASEMENT LIMITS SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION SUCH THAT THE ENCASEMENT TERMINATES AT A SEWER PIPE JOINT. THE JOINT SHALL BE FREE OF ENCASEMENT SO THAT IT CAN ACT AS A FLEXIBLE JOINT.
2. REINFORCED CONCRETE WITH ANCHORS MAY BE REQUIRED BY THE SANITARY ENGINEER TO PREVENT FLOATING.



**TYPICAL
CONCRETE
ENCASEMENT**

APPROVED:

DATE:

REVISION:

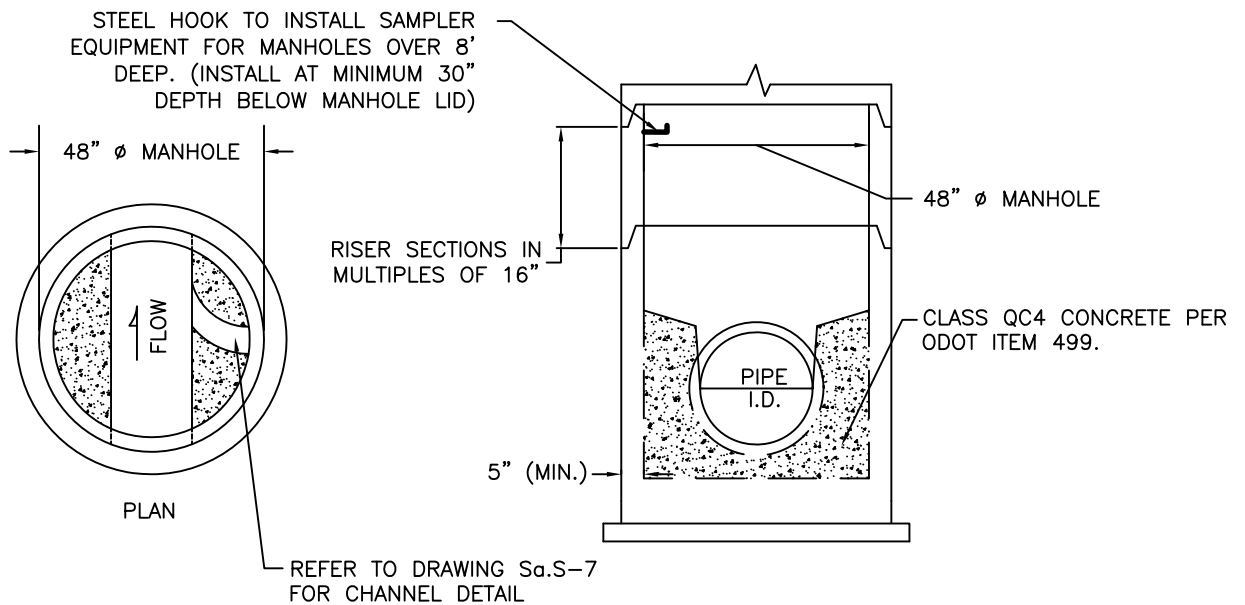
DRAWING NO.

Sa.S-29

**STANDARD
CONSTRUCTION
DRAWING**

SHEET NO.

1 of 1



NOTES:

1. WHEN SHOWN IN TRAFFIC AREAS, THE ALTERNATE TOP SLAB SHALL BE DESIGNED FOR TRAFFIC LOADING.
2. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO ASTM C478-70 UNLESS OTHERWISE SHOWN.
3. ALL CORE DRILLED OPENINGS SHALL BE DONE ONLY AS APPROVED AND DIRECTED BY THE SANITARY ENGINEER.
4. REFERENCE Sa.S-3 FOR MANHOLE SECTIONS AND Sa.S-5 FOR FRAME AND COVER CONSTRUCTION.
5. MANHOLE SECTIONS SHALL BE ASSEMBLED WITH CONSEAL, OR APPROVED EQUAL, AT ALL SECTION JOINTS IN ADDITION TO THE SEALED O-RING JOINT.



**TYPICAL
INSPECTION
MANHOLE
(COMMERCIAL BUILDINGS)**

APPROVED:

DATE:

REVISION:

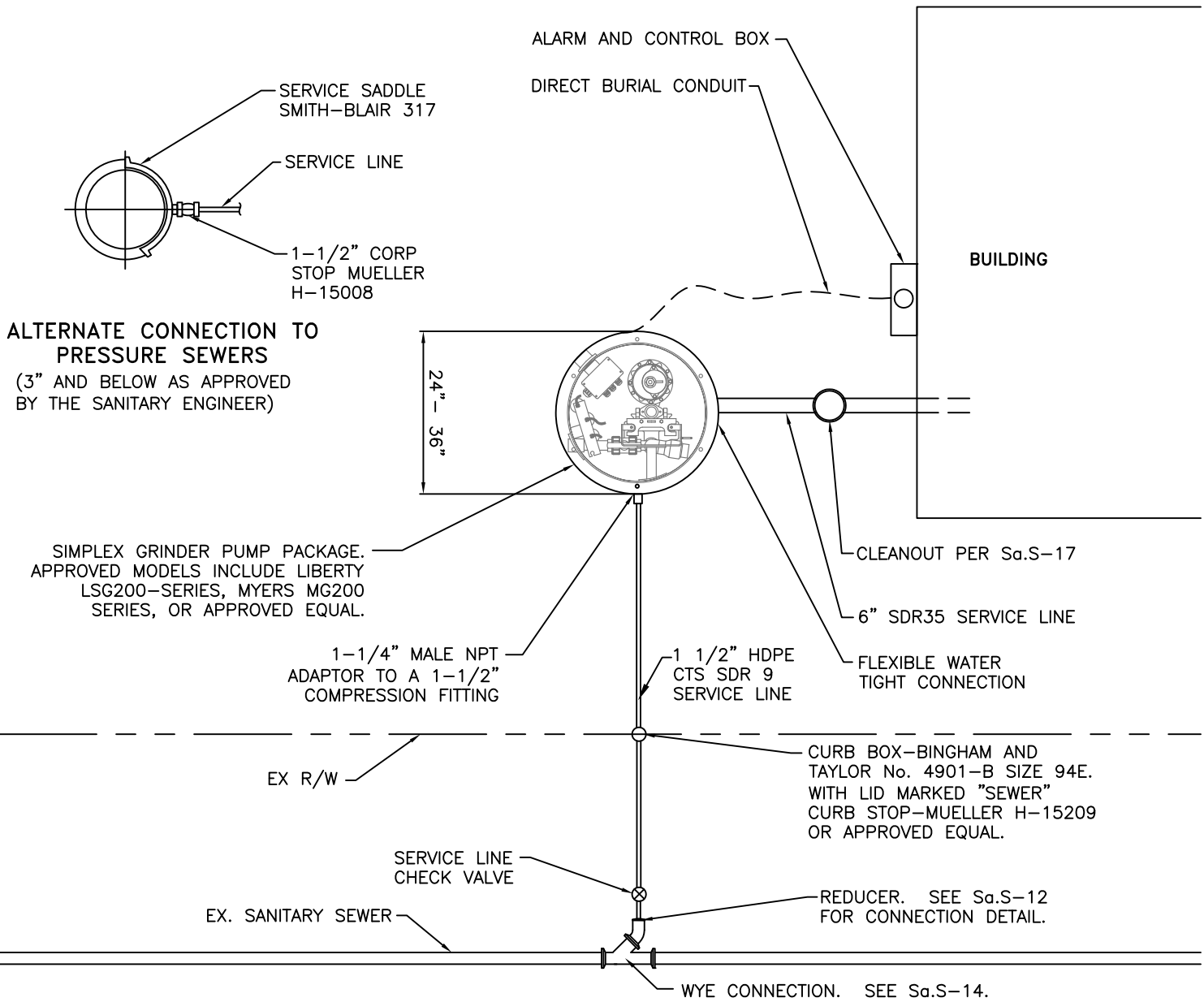
DRAWING NO.

Sa.S-30

**STANDARD
CONSTRUCTION
DRAWING**

SHEET NO.

1 of 1



NOTES:

1. POWER SUPPLY OF 240V, SINGLE PHASE, 60 Hz PROVIDED TO THE ALARM AND CONTROL BOX BY PROPERTY OWNER.
2. DUPLEX GRINDER UNIT MAY BE REQUIRED FOR COMMERCIAL INSTALLATION OR AT HOMEOWNER'S DISCRETION.
3. OPERATION AND MAINTENANCE INCLUDING ELECTRICAL COSTS ARE RESPONSIBILITY OF THE PROPERTY OWNER.
4. ALARM AND CONTROL BOX SHALL CONTAIN AT A MINIMUM AN AUDIBLE AND VISUAL ALARM.
5. EACH INSTALLATION SHALL BE REVIEWED AND APPROVED BY THE SANITARY ENGINEER.



GRINDER PUMP INSTALLATION

APPROVED:

DATE:

REVISION:

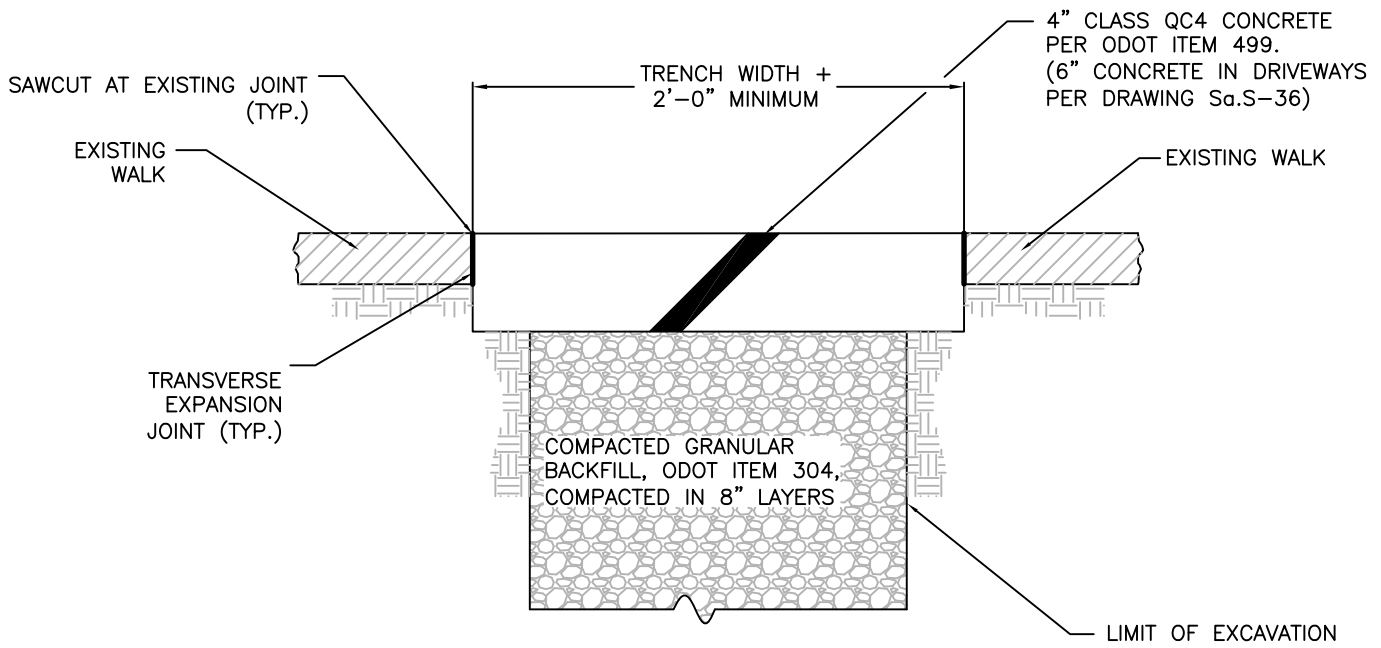
DRAWING NO.

Sa.S-31

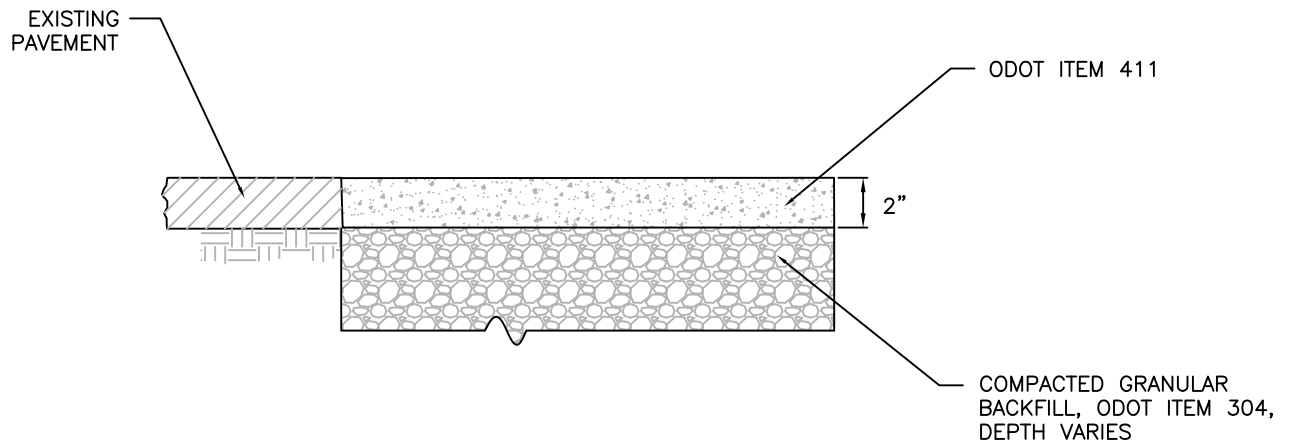
STANDARD
CONSTRUCTION
DRAWING

SHEET NO.

1 of 1



CONCRETE SIDEWALK



BERM REPLACEMENT



CONCRETE SIDEWALK
AND BERM
REPLACEMENT

APPROVED:

DATE:

REVISION:

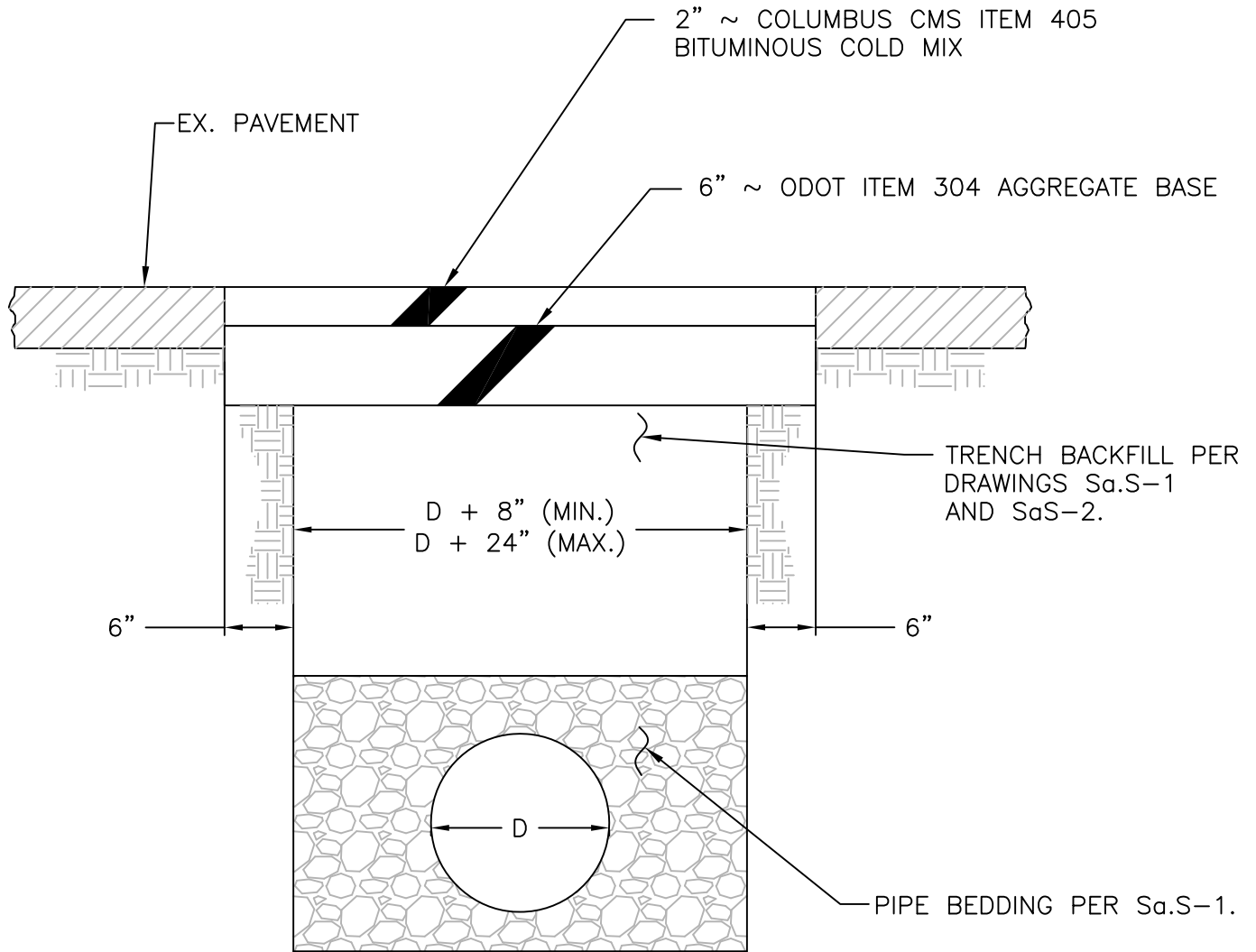
DRAWING NO.

Sa.S-32

STANDARD
CONSTRUCTION
DRAWING

SHEET NO.

1 of 1



NOTES:

1. UNLESS OTHERWISE APPROVED BY THE SANITARY ENGINEER, TEMPORARY PAVEMENT IS TO BE PLACED ON THE SAME DAY THE EXISTING PAVEMENT IS REMOVED.
2. USE OF TEMPORARY PAVEMENT SHALL BE CALLED OUT ON THE CONSTRUCTION DRAWINGS.



TEMPORARY PAVEMENT REPLACEMENT

APPROVED:

DATE:

REVISION:

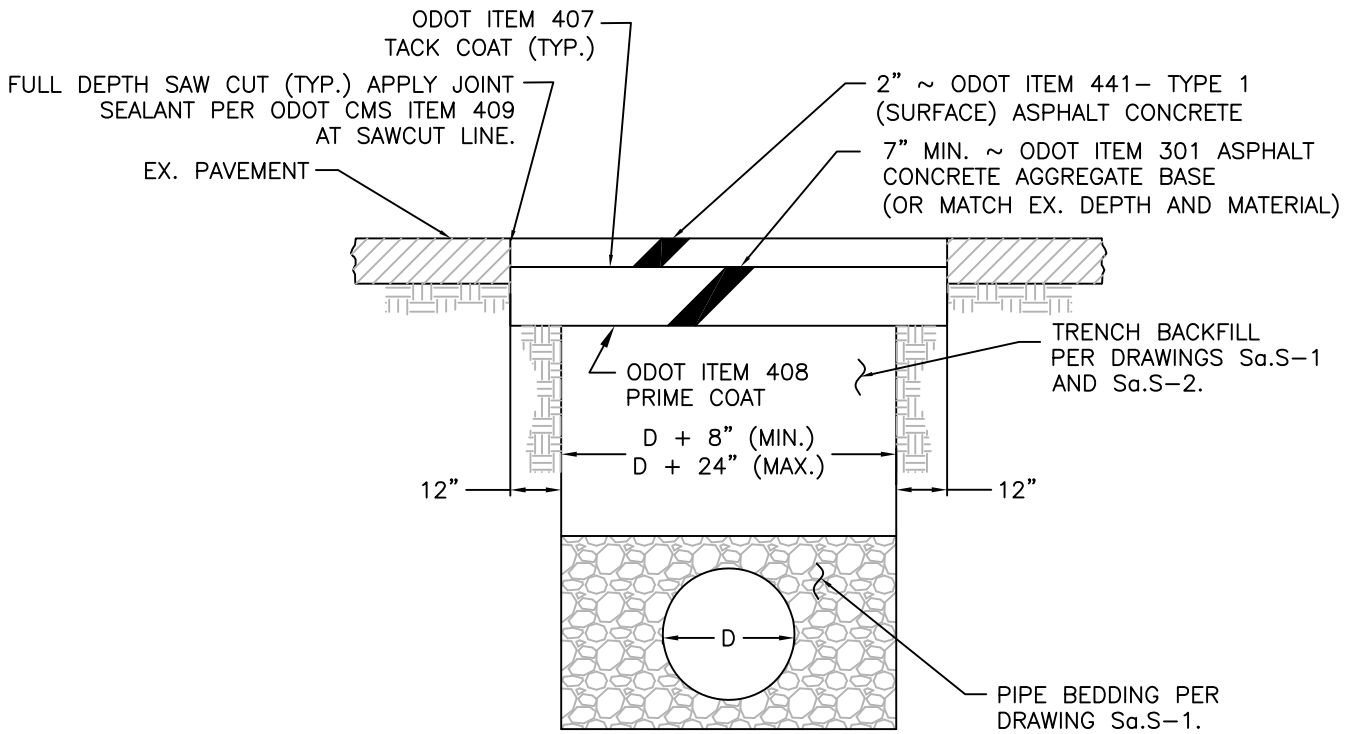
DRAWING NO.

Sa.S-33

STANDARD CONSTRUCTION DRAWING

SHEET NO.

1 of 1



COUNTY OR TOWNSHIP ROADS



PERMANENT
PAVEMENT
REPLACEMENT

APPROVED:

DATE:

REVISION:

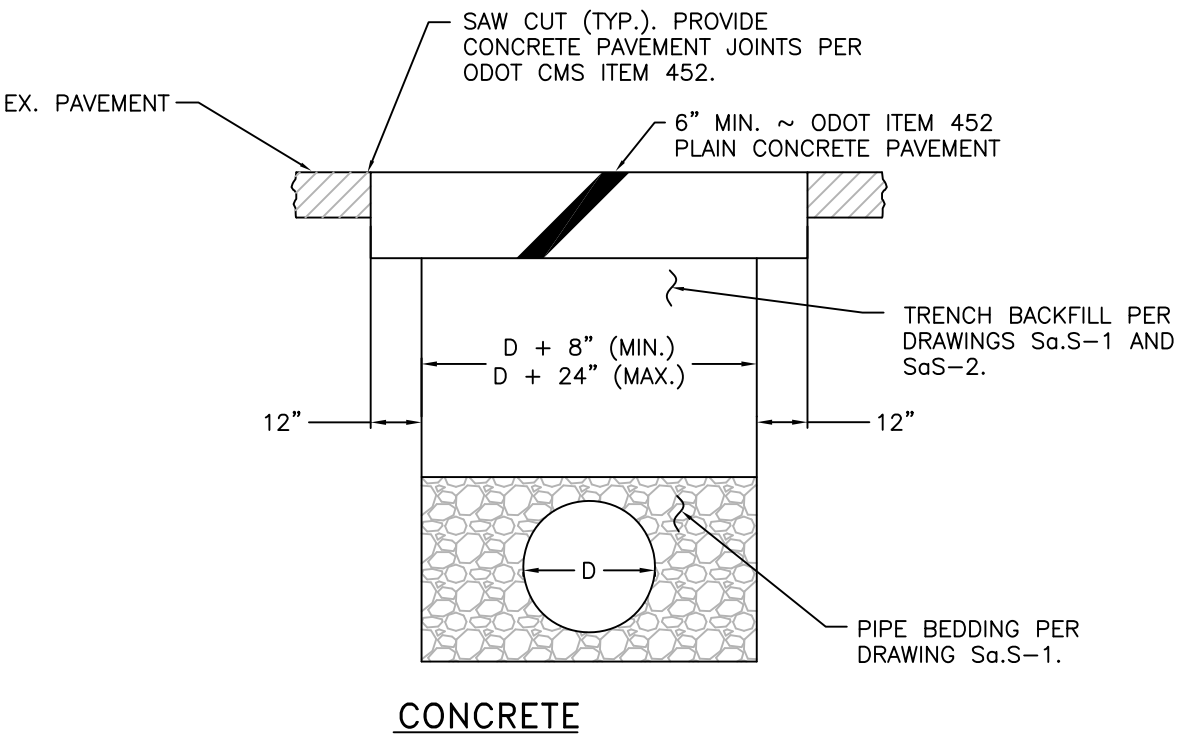
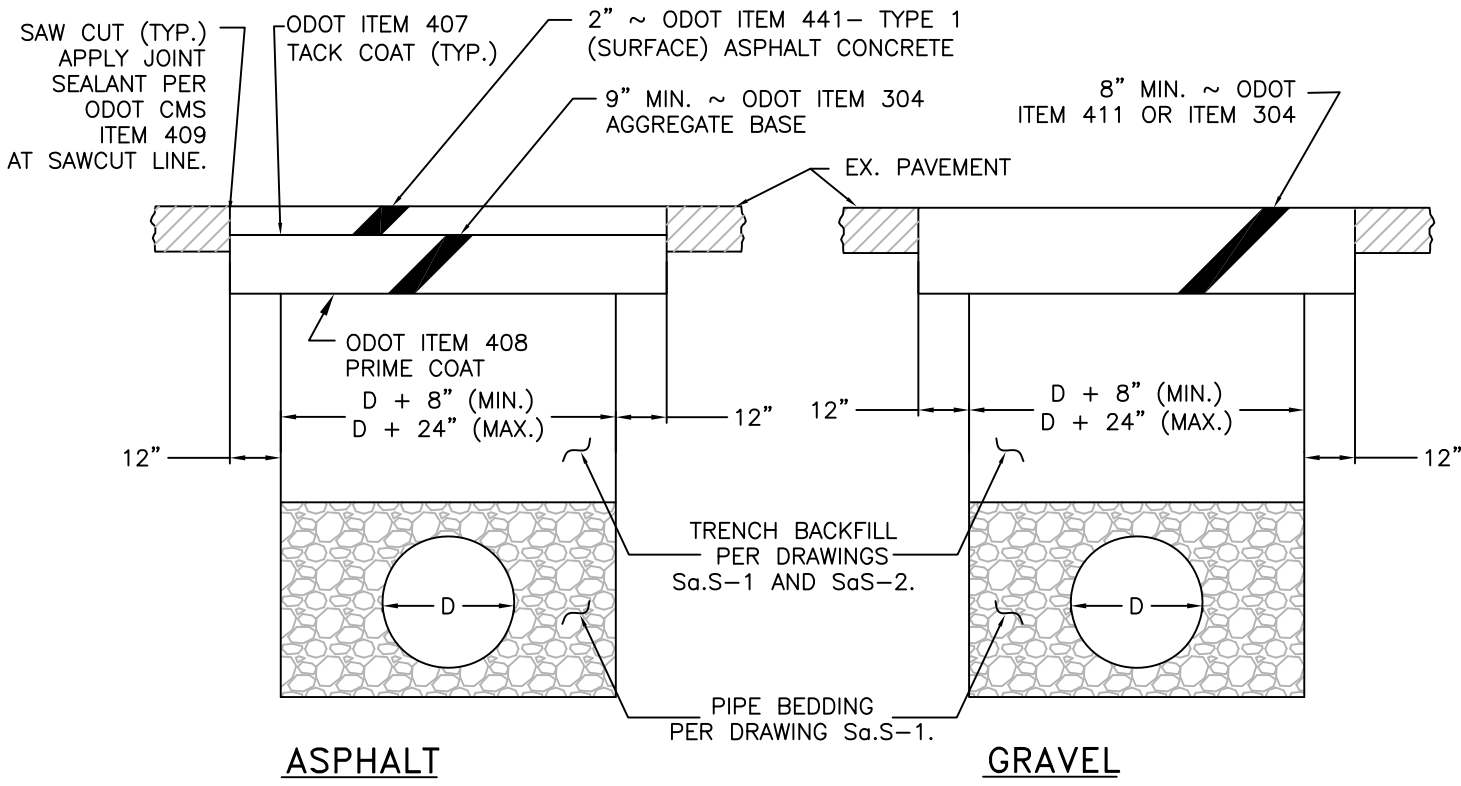
DRAWING NO.

Sa.S-34

STANDARD
CONSTRUCTION
DRAWING

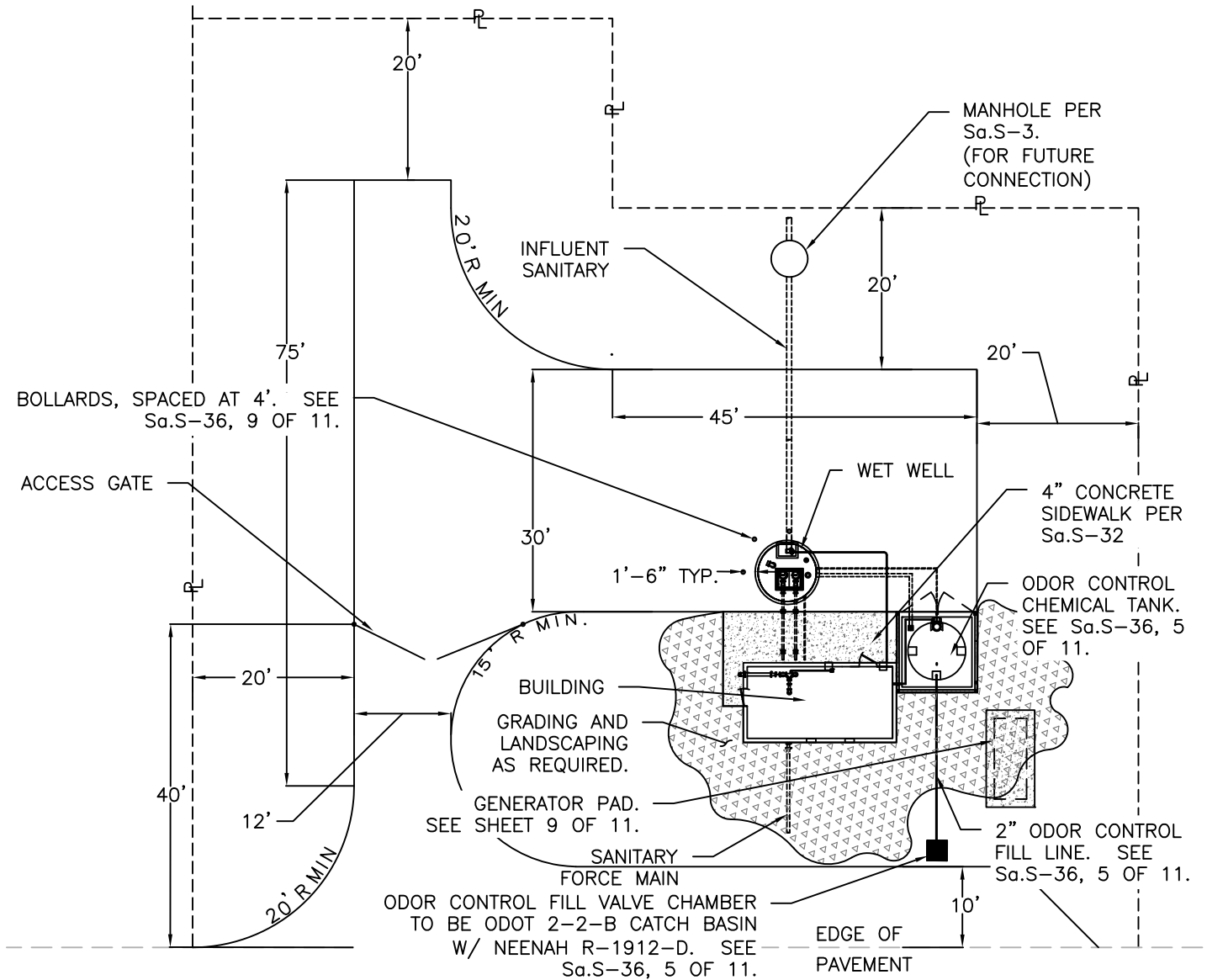
SHEET NO.

1 of 1



DRIVEWAY PAVEMENT REPLACEMENT

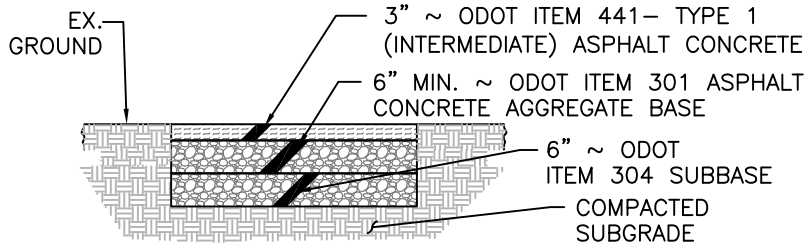
APPROVED:	STANDARD CONSTRUCTION DRAWING
DATE:	
REVISION:	
DRAWING NO. Sa.S-35	SHEET NO. 1 of 1



NOTE: SEE Sa.S-1 FOR TRENCH AND MARKING TAPE DETAILS.

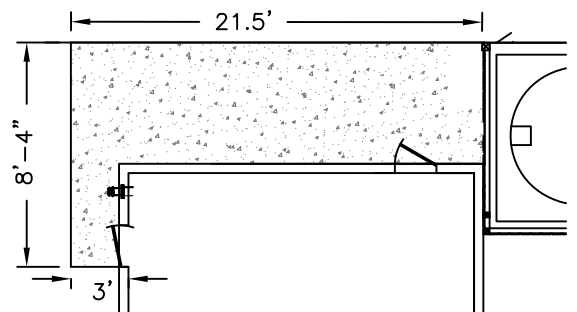
PUMP STATION SITE PLAN

SCALE: 1" = 20'



ASPHALT CONCRETE PAVEMENT DETAIL

SCALE: NTS



SIDEWALK PLAN

SCALE: NTS

NOTE: SIDEWALK DIMENSIONS MAY VARY PER SITE CONDITIONS.



PUMP STATION DETAILS

(500 GPM OR SMALLER)

APPROVED:

DATE:

REVISION:

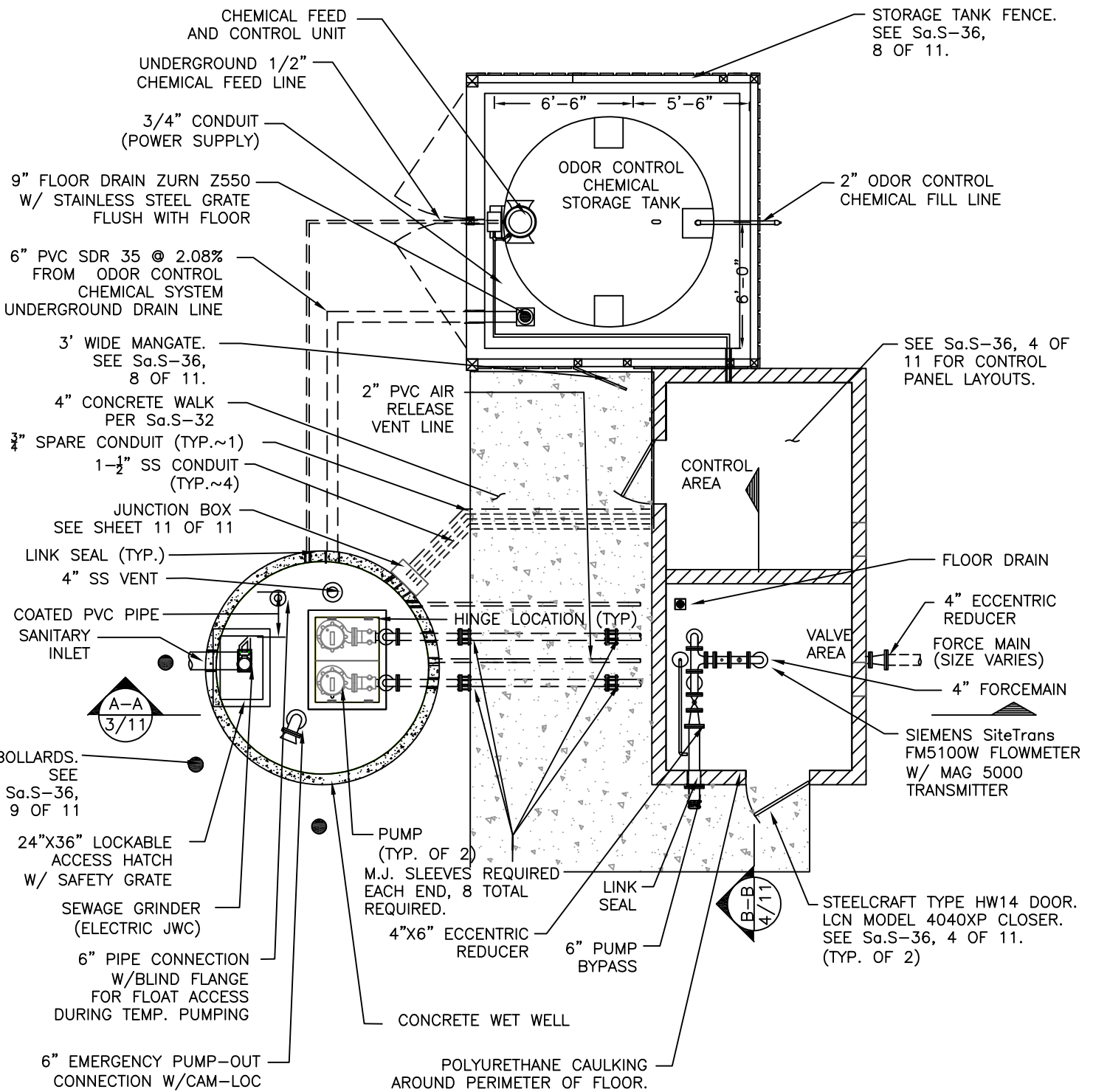
DRAWING NO.

Sa.S-36

STANDARD
CONSTRUCTION
DRAWING

SHEET NO.

1 of 11



NOTE:
SEE Sa.S-36, 5 OF 11 FOR ODOR CONTROL CHEMICAL DETAILS AND NOTES.

PLAN VIEW

SCALE: NTS



**PUMP STATION
DETAILS**

APPROVED:

DATE:

REVISION:

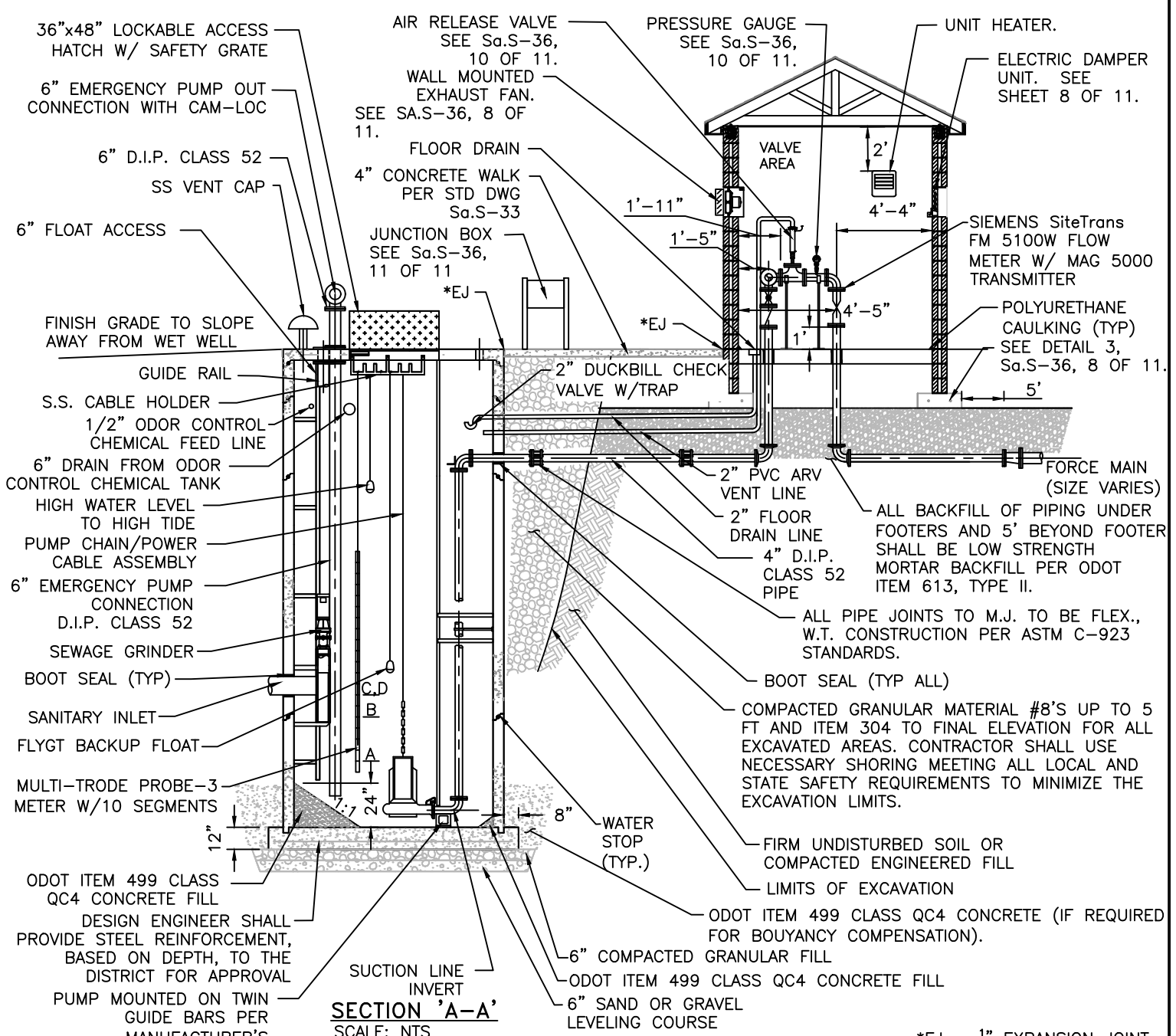
DRAWING NO.

Sa.S-36

**STANDARD
CONSTRUCTION
DRAWING**

SHEET NO.

2 of 11



CONTRACTOR SHALL COMPLETE THE FOLLOWING TABLE:

PUMP						PUMP CONTROL			
NO. OF PUMPS	TYPE	DESIGN		MOTOR		REMARKS	FLOAT	FLOAT ACTION	ELEV
		FLOW	TDH	HP	RPM				
2	SUB'M EXPLOSION PROOF	GPM	FT	MIN.	1800 MAX	NON-OVER LOADING FOR ALL POINTS ON THE CURVE	A	PUMP OFF	
							B	LEAD PUMP ON	
							C	LAG PUMP ON	
							D	ALARM ON	



PUMP STATION DETAILS

APPROVED:

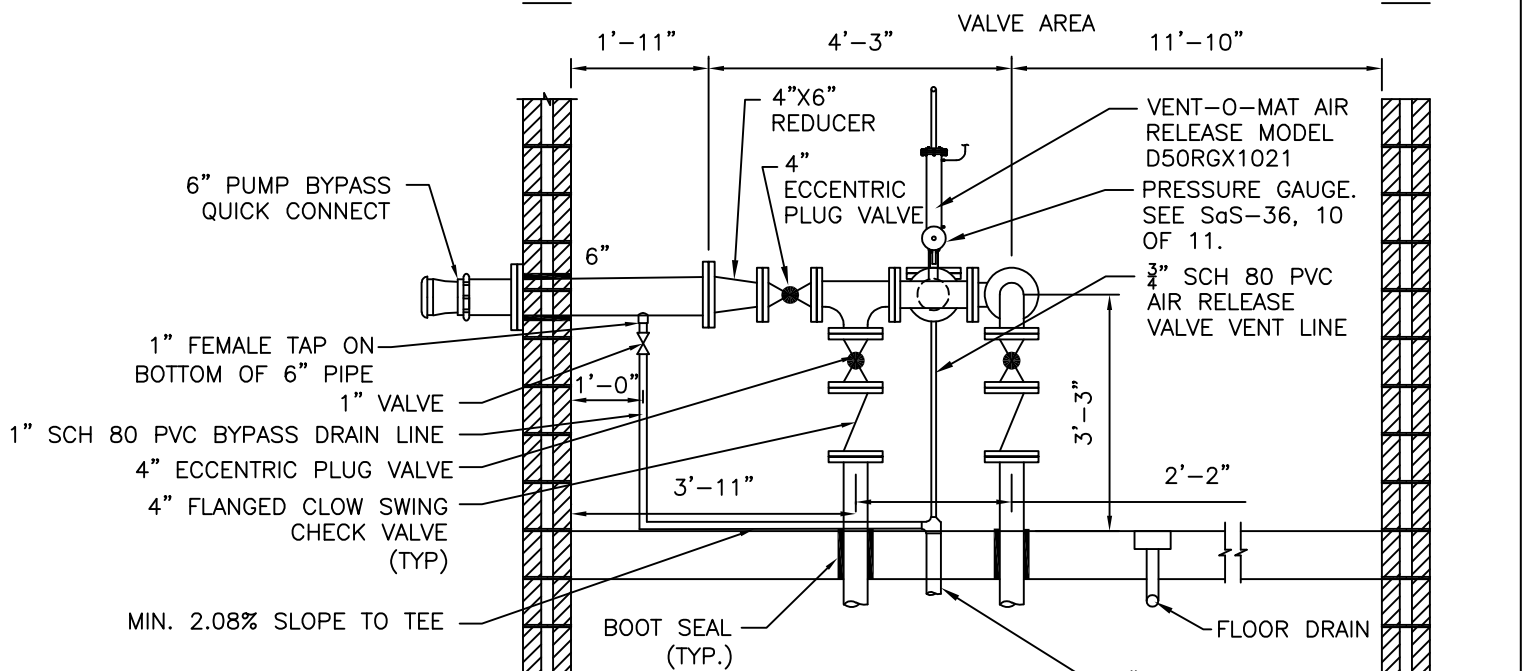
DATE:

REVISION:

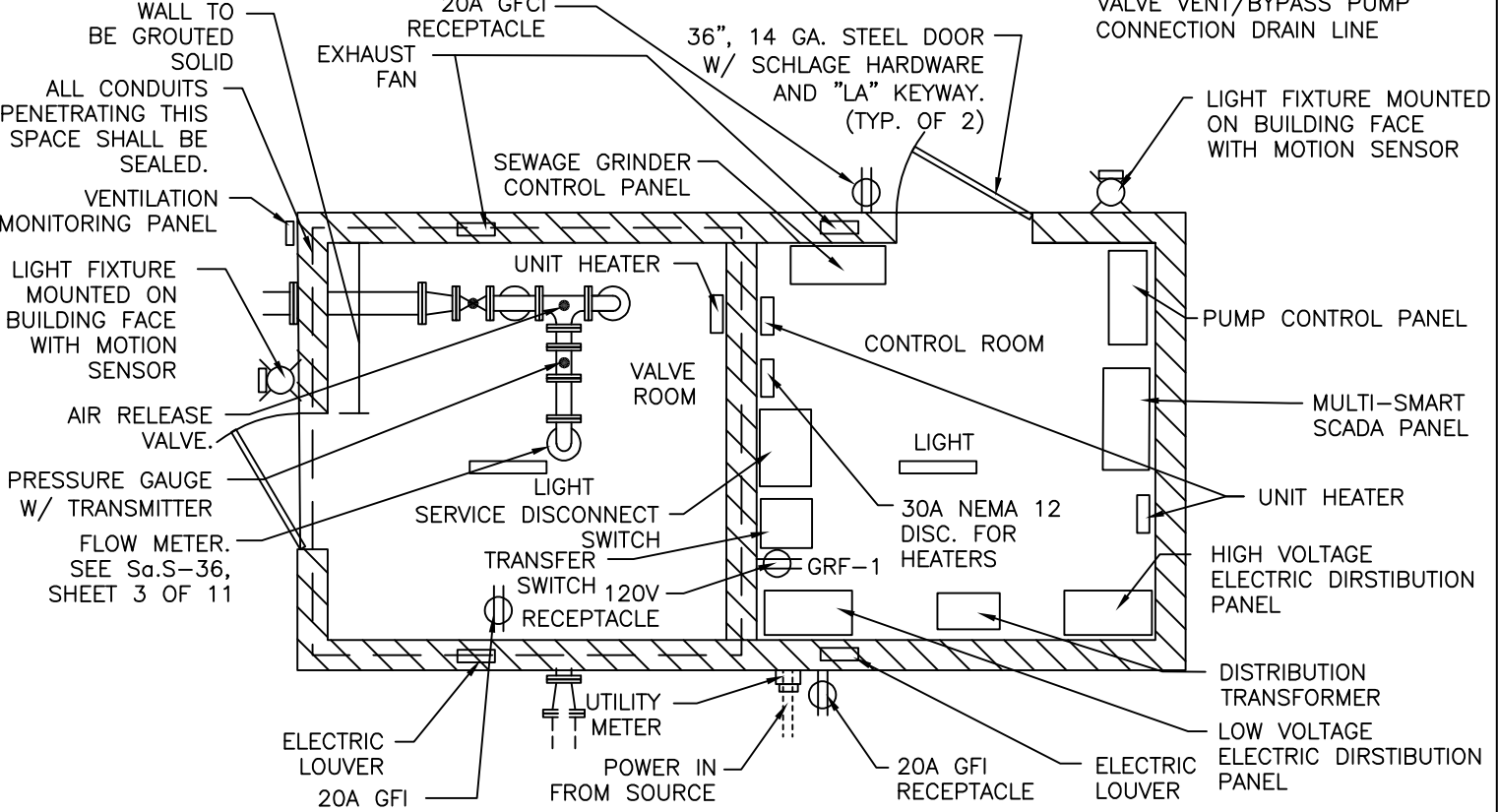
STANDARD CONSTRUCTION DRAWING

DRAWING NO.
Sa.S-36

SHEET NO.
3 of 11



SECTION 'B-B'
SCALE: NTS



CONTROL ROOM PANEL LAYOUT
SCALE: NTS

- NOTES:**
1. PIPING AND VALVE LAYOUT SHOWN FOR REFERENCE ONLY.
 2. INCOMING POWER MUST BE WITHIN TOLERANCE OF 460V + 10% MAX.
 3. ADD PIPE JACKS WHERE NECESSARY.



PUMP STATION DETAILS

APPROVED:
DATE:
REVISION:

**STANDARD
CONSTRUCTION
DRAWING**

DRAWING NO.
Sa.S-36

SHEET NO.
4 of 11

SEE Sa.S-36, 8 OF 11
FOR FENCE DETAILS

CHEMICAL FEED AND CONTROL UNIT.
SEE DETAIL THIS SHEET.

UNDERGROUND 1/2" CHEMICAL
FEED LINE

UNDERGROUND 3/4" CONDUIT
(POWER SUPPLY)

TIMER(S)

FAN

POWER
ON/OFF
SWITCH

Ø 1/2"
SUCTION
LINE

CHEMICAL FEED
PUMPS, 2 EA
GORMAN RUPP
BELLOWS PUMPS

3-WAY
VALVE

CALIBRATION
CYLINDER

DISCHARGE
LINE

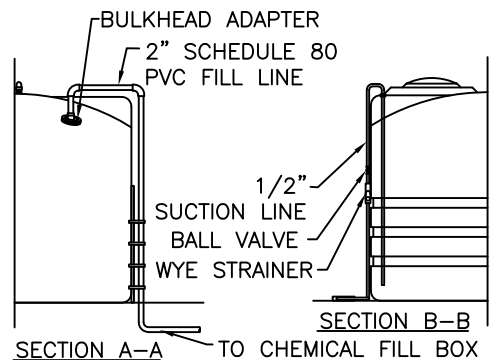
CHEMICAL FEED AND CONTROL UNIT

SCALE: NTS

UNDERGROUND DRAIN LINE
6" PVC SDR 35 @ 2.08%
FROM ODOR CONTROL
CHEMICAL SYSTEM

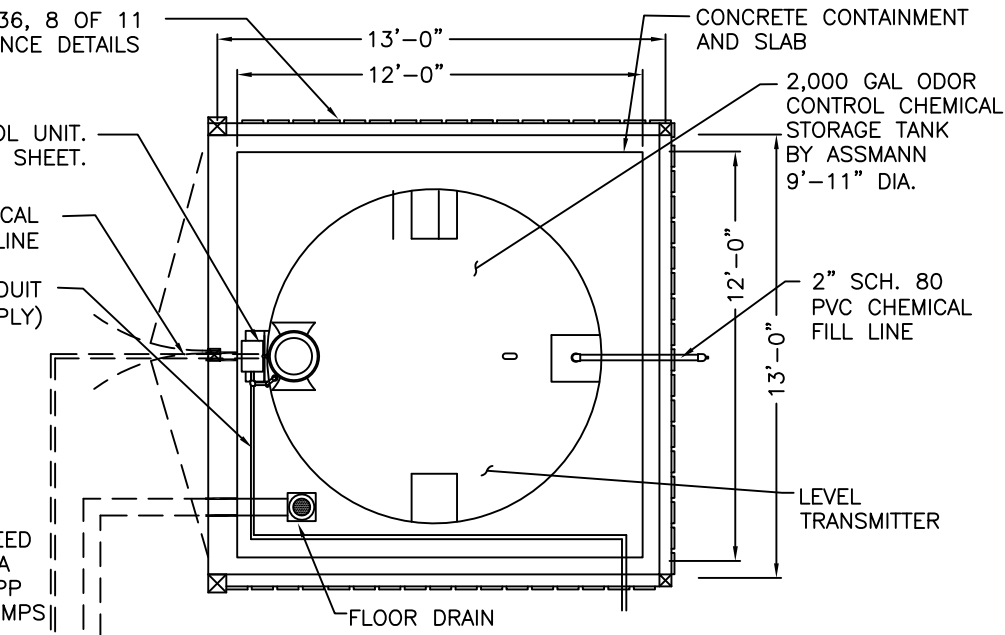
6" PVC SDR 35 @ 2.08%
TO WET WELL

4" THICK GRAVEL BASE
ODOT ITEM 304

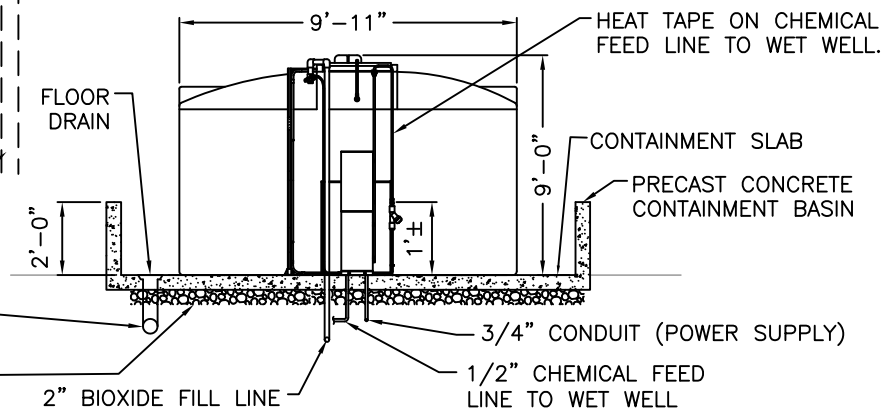


FILL LINE DETAILS

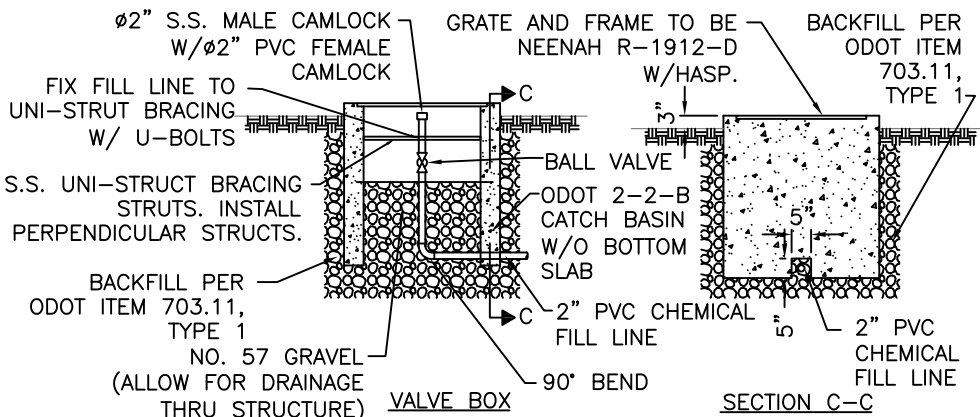
SCALE: NTS



PLAN VIEW
NOT TO SCALE



ELEVATION VIEW
SCALE: NTS



ODOR CONTROL CHEMICAL FILL BOX DETAIL LOCATED NEAR ACCESS DRIVE
SCALE: NTS

NOTE: SEE SHEET 1 OF 11 FOR LOCATION OF ODOR CONTROL CHEMICAL FILL BOX.



**PUMP STATION
DETAILS**

APPROVED:

DATE:

REVISION:

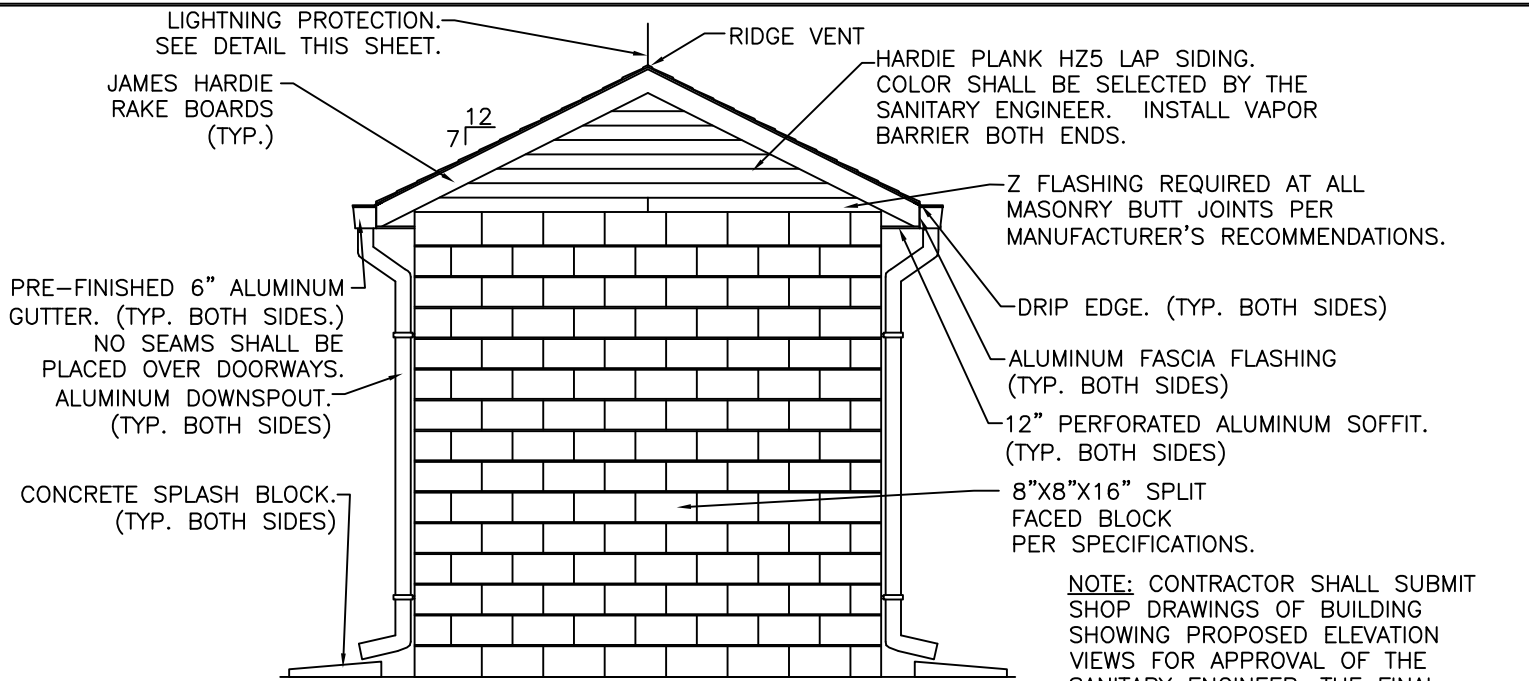
DRAWING NO.

Sa.S-36

**STANDARD
CONSTRUCTION
DRAWING**

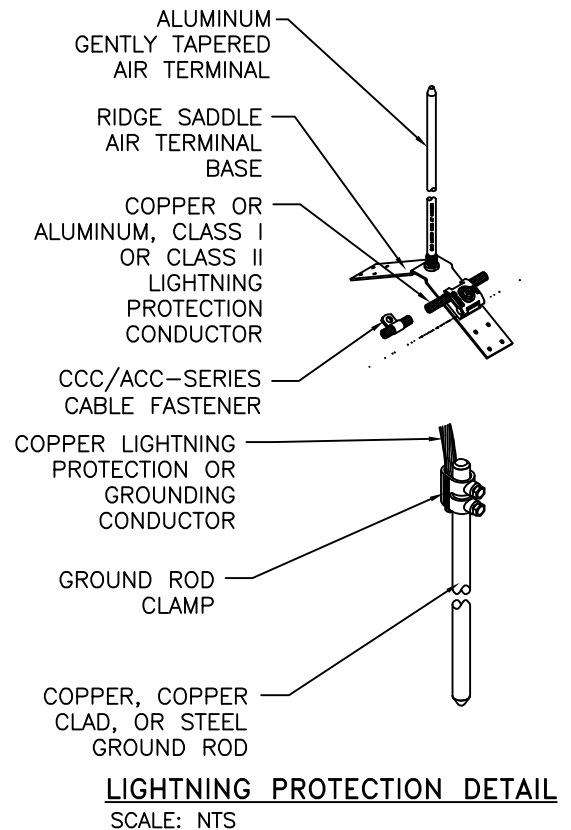
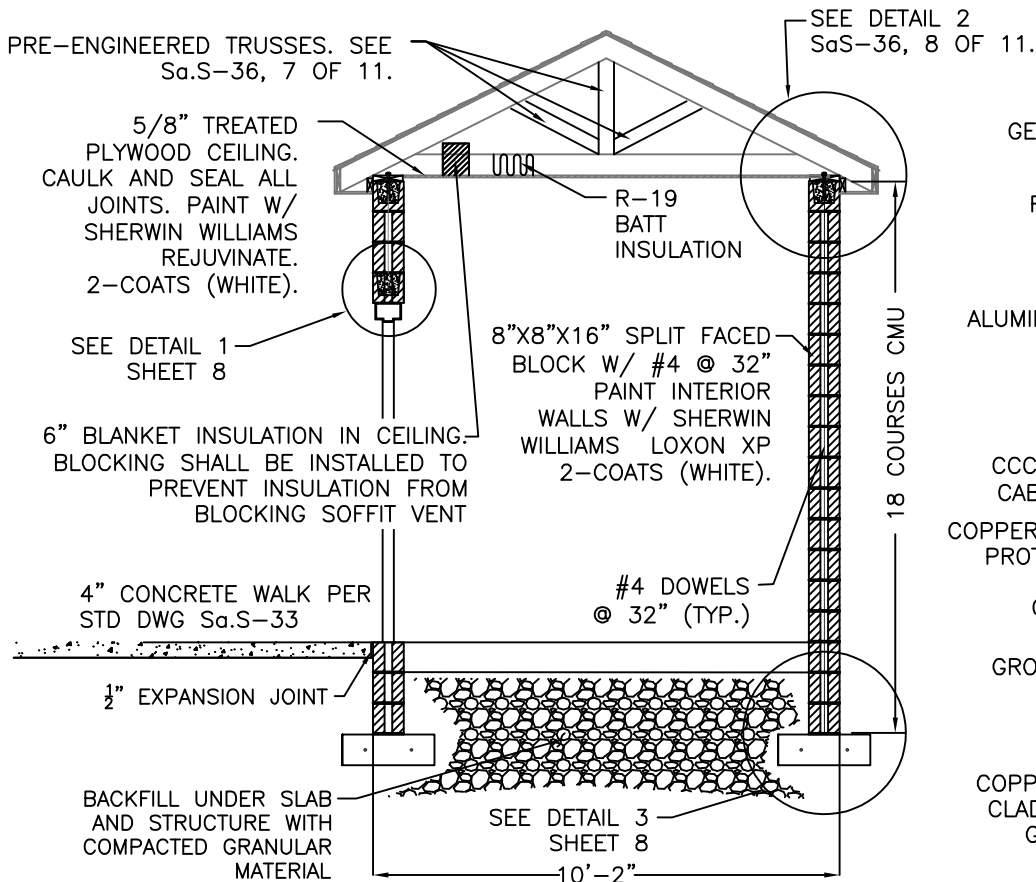
SHEET NO.

5 of 11



PUMP STATION BUILDING EXTERIOR ELEVATION VIEW
SCALE: NTS

NOTE: CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF BUILDING SHOWING PROPOSED ELEVATION VIEWS FOR APPROVAL OF THE SANITARY ENGINEER. THE FINAL APPEARANCE OF THE BUILDING MAY VARY TO MATCH ARCHITECTURAL STYLES OF THE DEVELOPMENT OR AS REQUIRED BY THE SANITARY ENGINEER.



**PUMP STATION
DETAILS**

APPROVED:

DATE:

REVISION:

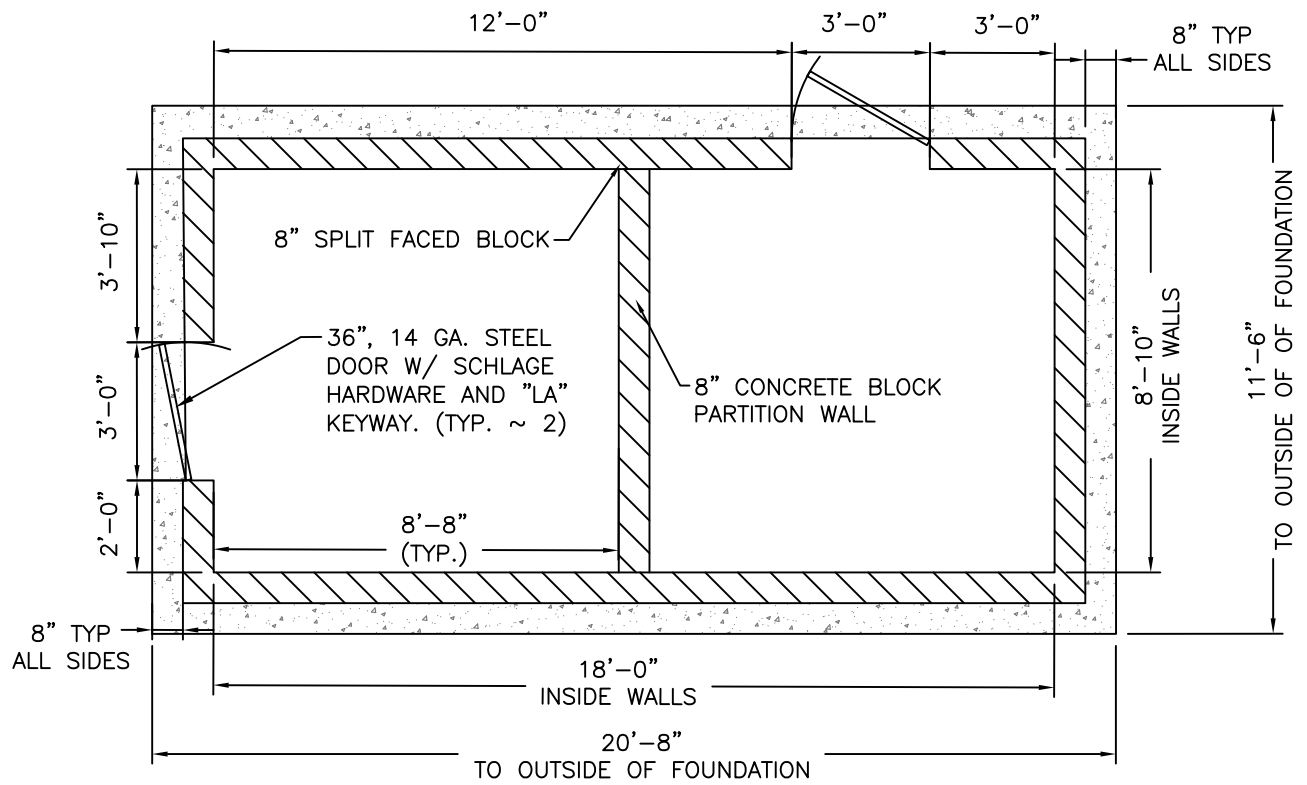
DRAWING NO.

Sa.S-36

**STANDARD
CONSTRUCTION
DRAWING**

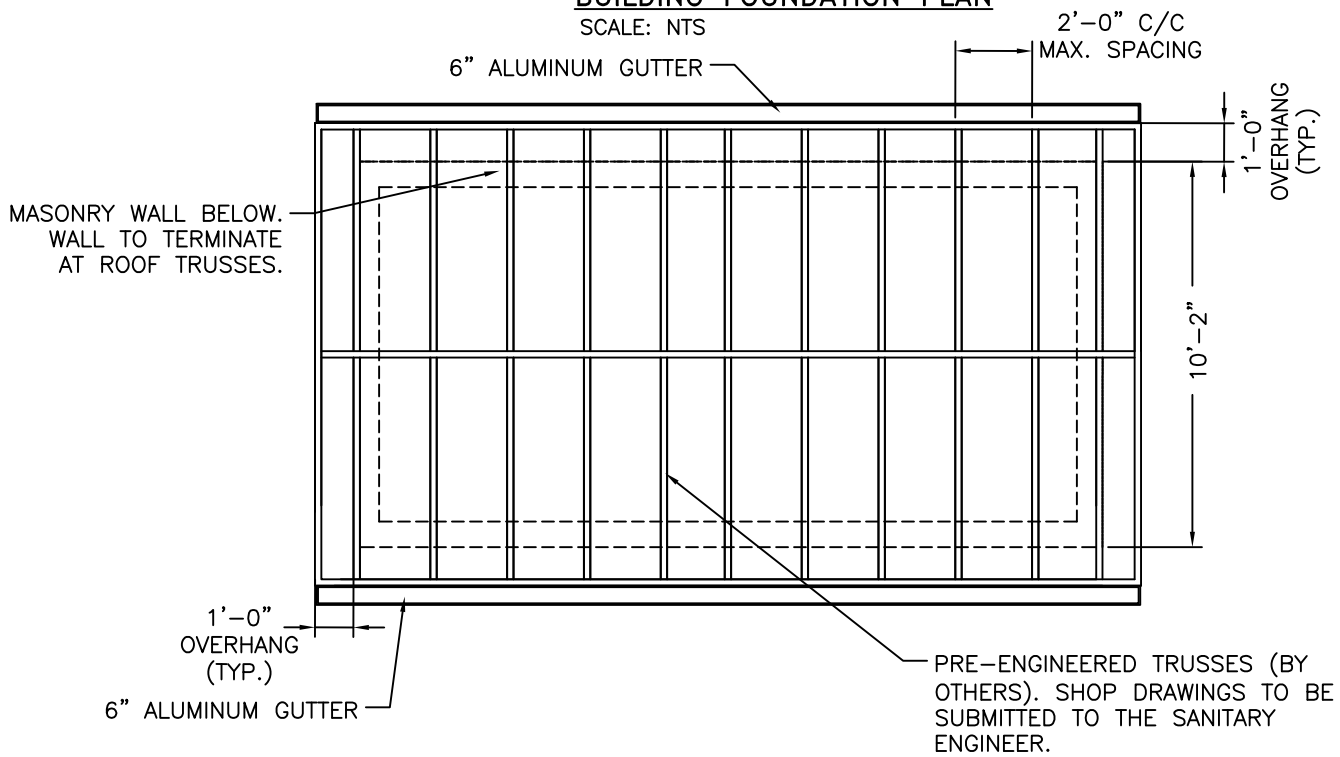
SHEET NO.

6 of 11



BUILDING FOUNDATION PLAN

SCALE: NTS



BUILDING ROOF PLAN

SCALE: NTS



**PUMP STATION
DETAILS**

APPROVED:

DATE:

REVISION:

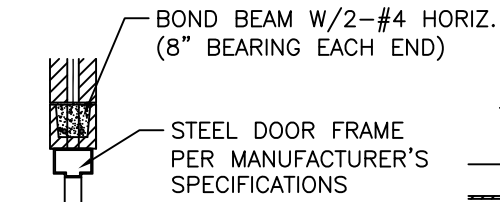
DRAWING NO.

Sa.S-36

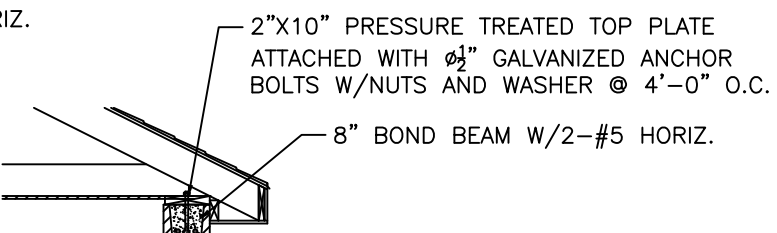
**STANDARD
CONSTRUCTION
DRAWING**

SHEET NO.

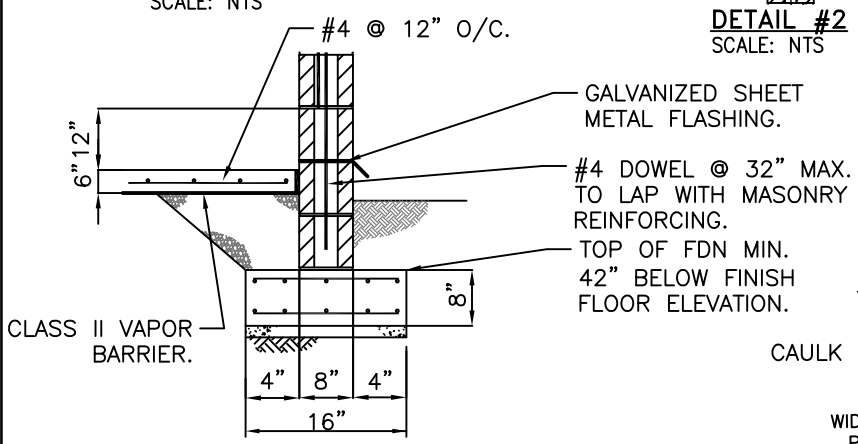
7 of 11



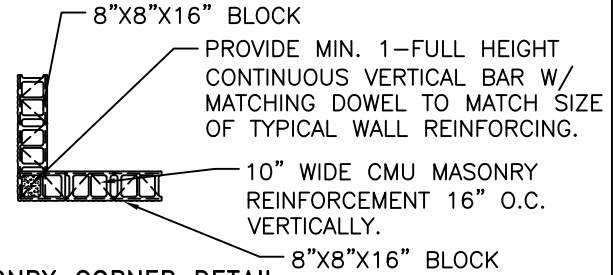
DETAIL #1
SCALE: NTS



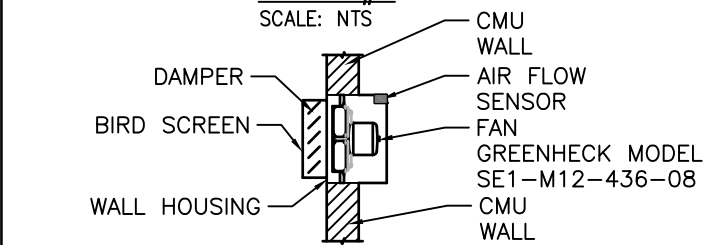
DETAIL #2
SCALE: NTS



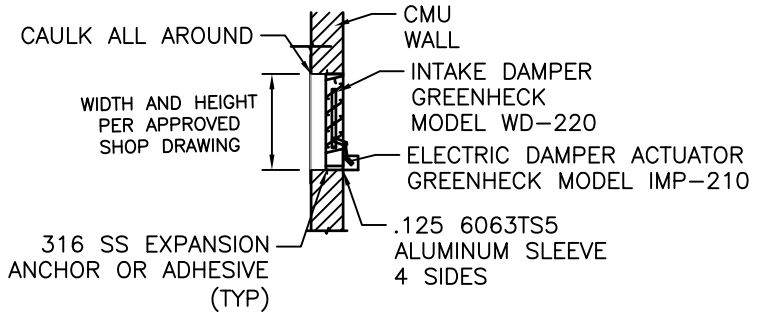
DETAIL #3
SCALE: NTS



MASONRY CORNER DETAIL
SCALE: NTS

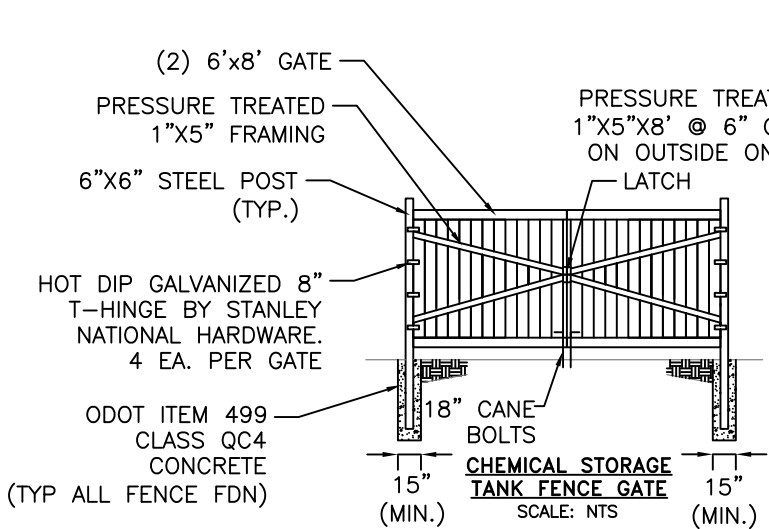


WALL MOUNTED EXHAUST FAN DETAIL
SCALE: NTS

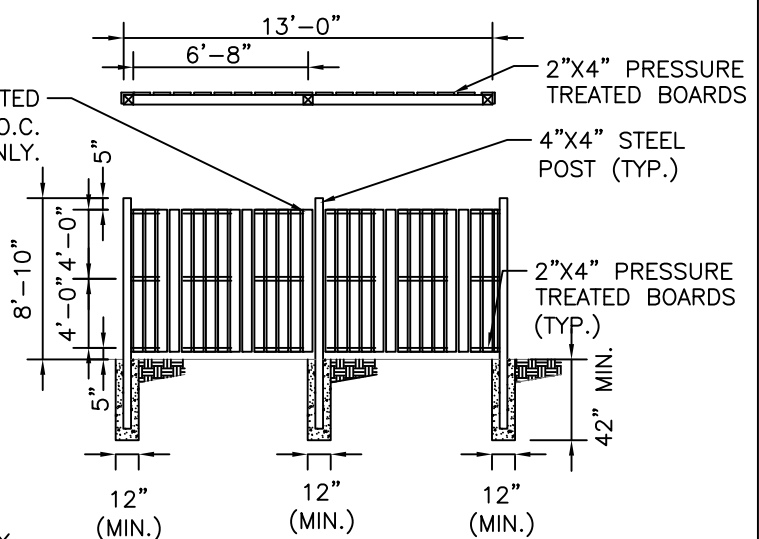


ELECTRIC MOTOR ACTUATED DAMPER DETAIL
SCALE: NTS

NOTE: CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO ENGINEER FOR APPROVAL.



CHEMICAL STORAGE TANK FENCE GATE
SCALE: NTS



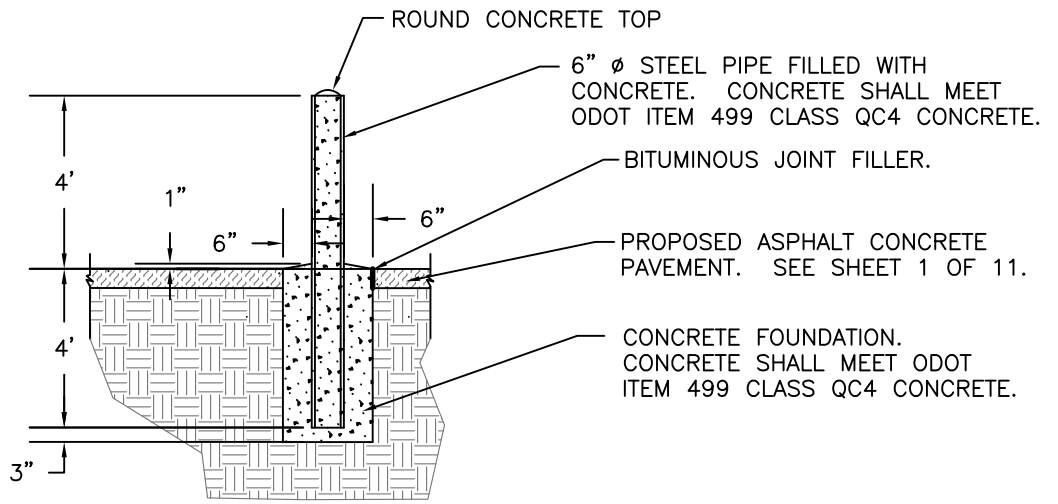
CHEMICAL STORAGE TANK FENCE DETAIL
SCALE: NTS

CONTRACTOR SHALL SUBMIT GATE SHOP DRAWINGS TO SANITARY ENGINEER FOR APPROVAL.



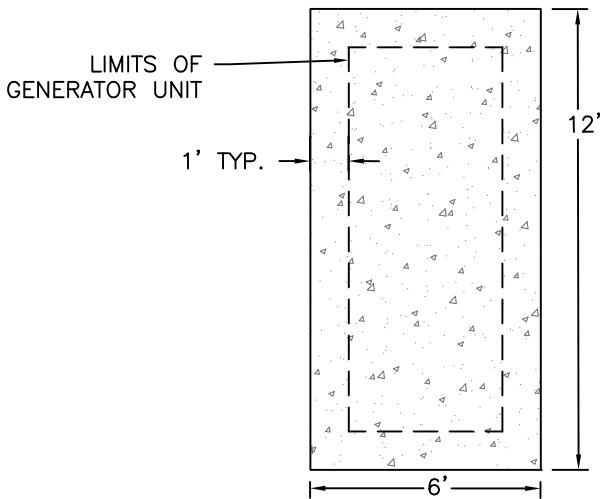
**PUMP STATION
DETAILS**

APPROVED:	STANDARD CONSTRUCTION DRAWING
DATE:	
REVISION:	
DRAWING NO. Sa.S-36	SHEET NO. 8 of 11



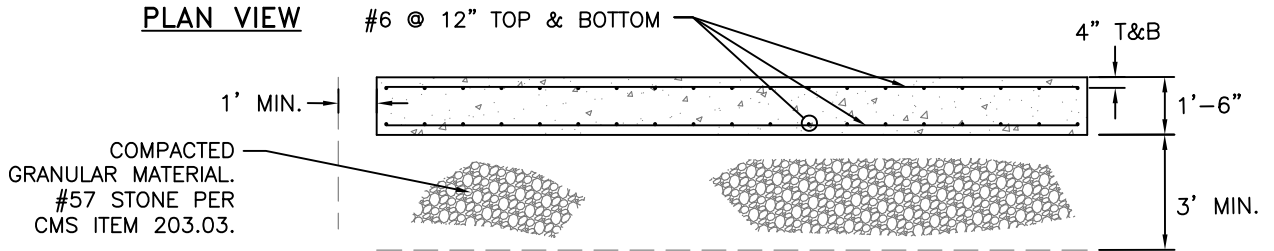
NOTE: STEEL PIPE SHALL BE GALVANIZED (1.8 OZ/SF) AND HAVE A MINIMUM WALL THICKNESS OF 0.25 INCH.

PUMP STATION BOLLARD DETAIL
SCALE: NTS



NOTES:

1. CONCRETE FOR GENERATOR PAD SHALL MEET ODOT CMS ITEM 499 CLASS QC4 CONCRETE.
2. REINFORCING STEEL SHALL MEET ODOT ITEM 709.
3. GENERATOR PAD DIMENSIONS SHALL VARY BASED ON EQUIPMENT SUPPLIED.
4. COORDINATE WITH LOCAL FIRE DEPARTMENT OR FIRE MARSHAL FOR ACCEPTABLE LOCATION OF GENERATOR AND REQUIRED FENCING AND BOLLARDS.



SECTION VIEW
PUMP STATION GENERATOR PAD DETAIL
SCALE: NTS



**PUMP STATION
DETAILS**

APPROVED:

DATE:

REVISION:

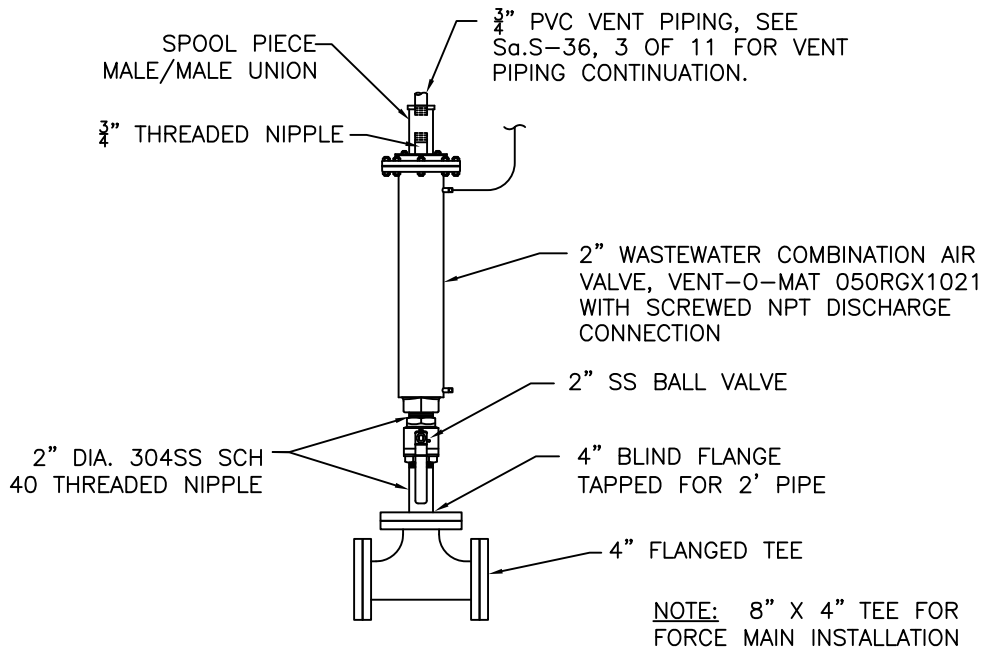
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Sa.S-36

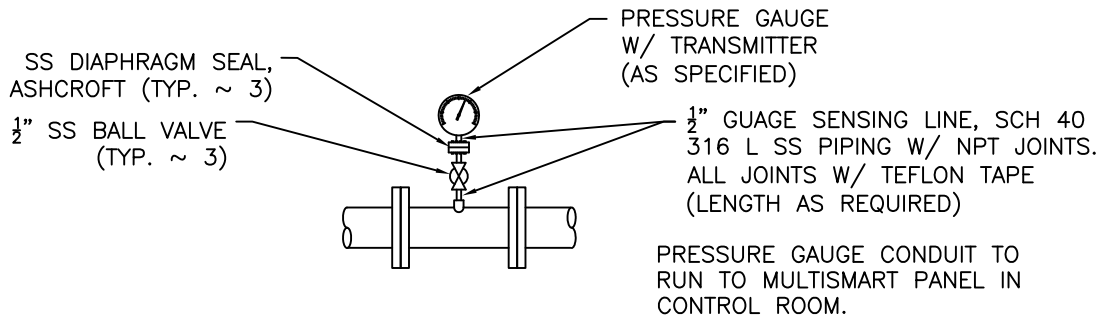
**STANDARD
CONSTRUCTION
DRAWING**

SHEET NO.

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TYPICAL AIR RELEASE VALVE DETAIL
SCALE: NTS



TYPICAL GAUGE INSTALLATION DETAIL
SCALE: NTS



PUMP STATION DETAILS

APPROVED:

DATE:

REVISION:

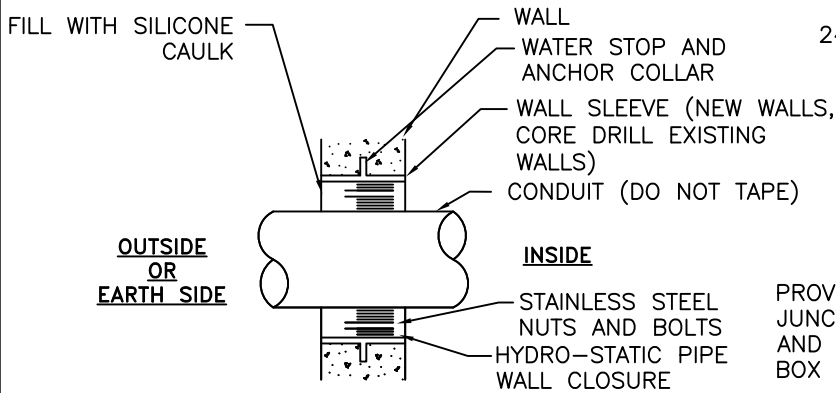
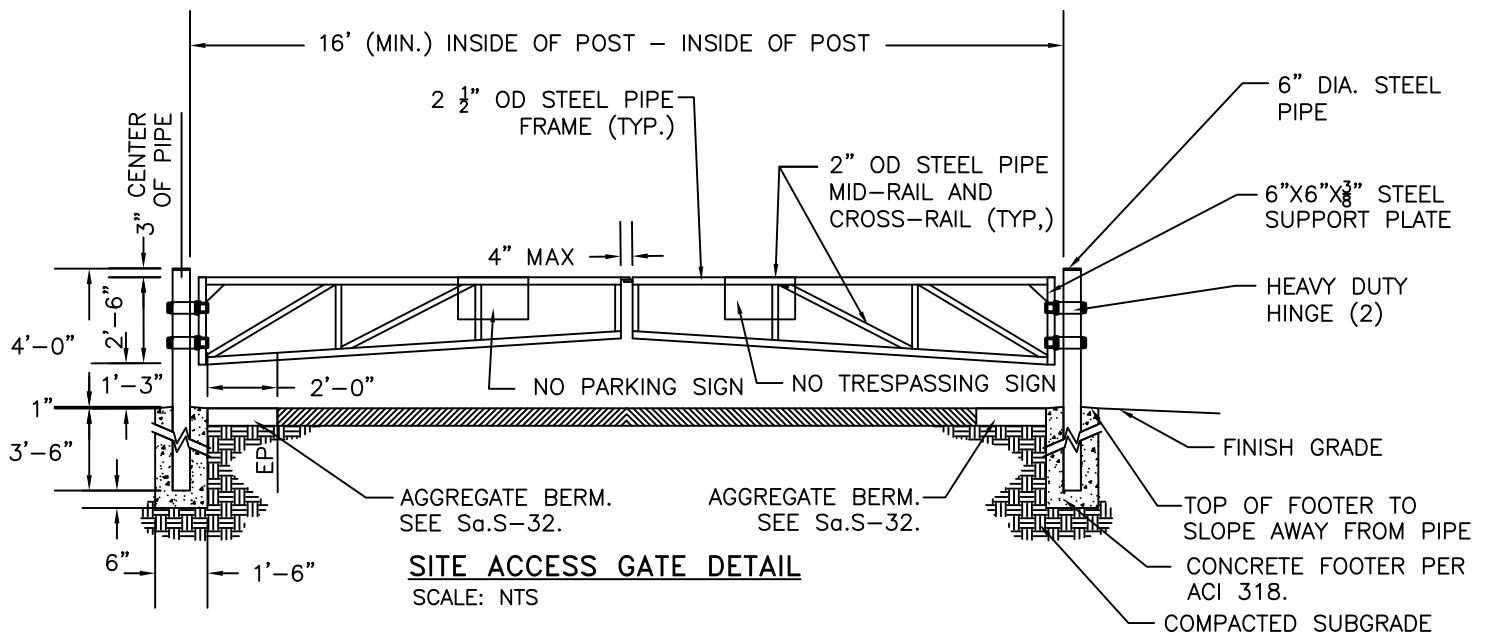
DRAWING NO.

Sa.S-36

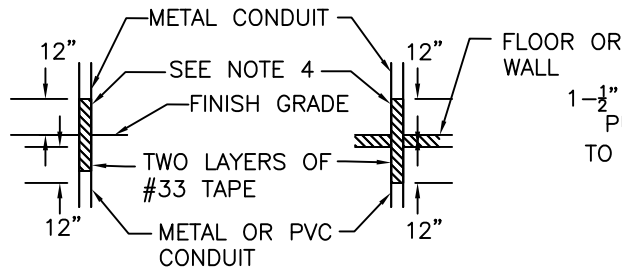
STANDARD
CONSTRUCTION
DRAWING

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THRU WALL PENETRATION SEAL



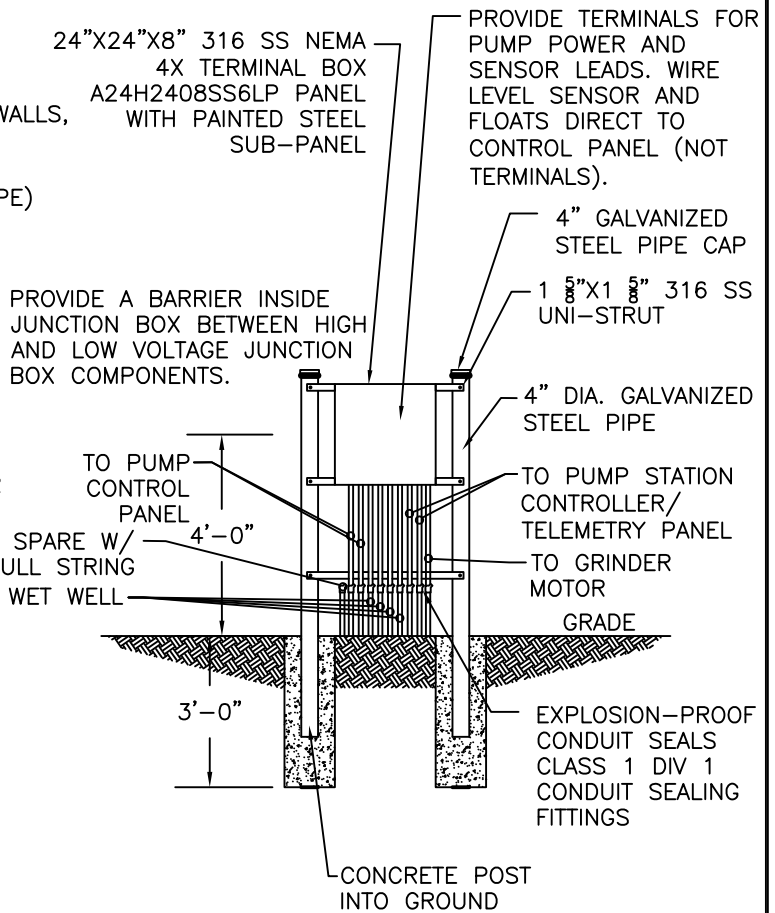
CONDUIT PENETRATIONS

CONDUIT INSTALLATION DETAILS

SCALE: NTS

NOTES:

1. CONDUITS SHALL BE INSTALLED AS SHOWN, THROUGH FLOORS, BLOCK OR CONCRETE WALLS, AND EARTH.
2. THIS INSTALLATION METHOD NOT REQUIRED FOR SLEEVED OPENINGS.
3. TAPE TO 3" BEYOND TRANSITION IF BURIED CONDUIT IS PVC.
4. TRANSITION FROM METAL TO PVC SHALL BE AT GRADE OR TOP OF FLOOR.



JUNCTION BOX DETAIL

INSTALLATION ENTERING/EXITING CLASS 1, DIV. 2 AREA

SCALE: NTS



PUMP STATION DETAILS

APPROVED:

DATE:

REVISION:

DRAWING NO.

Sa.S-36

STANDARD CONSTRUCTION DRAWING

SHEET NO.

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