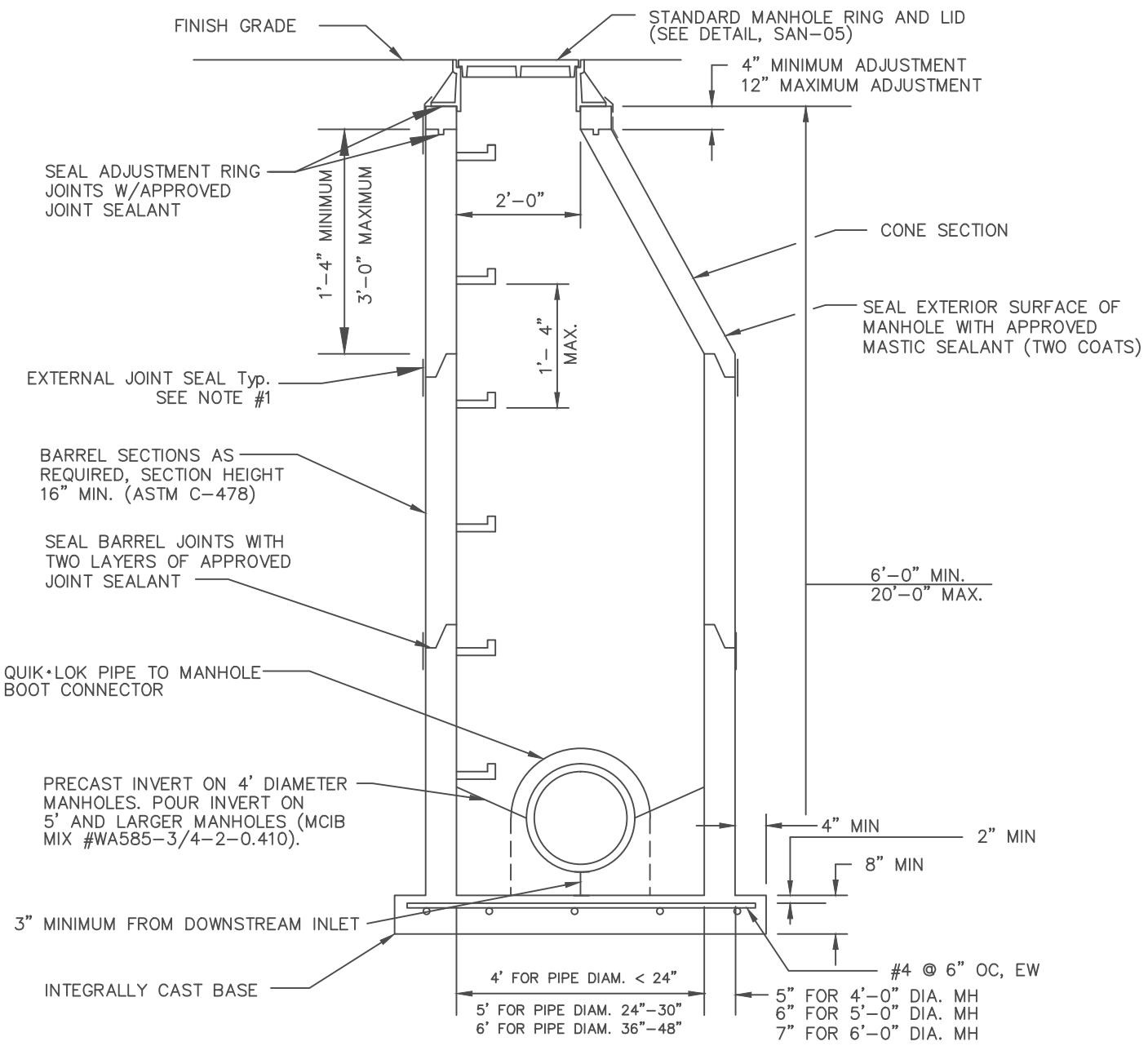


STANDARD PRECAST MANHOLE

NOTES;
1. ALL CONCRETE JOINTS, INCLUDING ADJUSTMENT RING(S), SHALL HAVE CONSEAL CS–212 OR INFI–SHIELD 6" GATOR WRAP INSTALLED OR APPROVED EQUAL.
2. ALL MANHOLES SHALL BE VACUUM TESTED.
3. BASE TO BE SET ON 6" OF COMPACTED GRANULAR MATERIAL.
4. MANHOLE ADJUSTING RINGS IN PAVEMENT SHALL BE 4 OR 6 INCHES THICK AND BE EAST JORDAN IRON WORKS INFRA–RISER® RUBBER COMPOSITE OR APPROVED EQUAL. FOR NON PAVEMENT APPLICATION USE LADTECH HDPE OR APPROVED EQUAL.
5. ALL CONCRETE SHALL BE CORROSION RESISTANT USING CONSHIELD ANTIMICROBIAL ADDITIVE WITH CONTINT COLORANT ADDED.

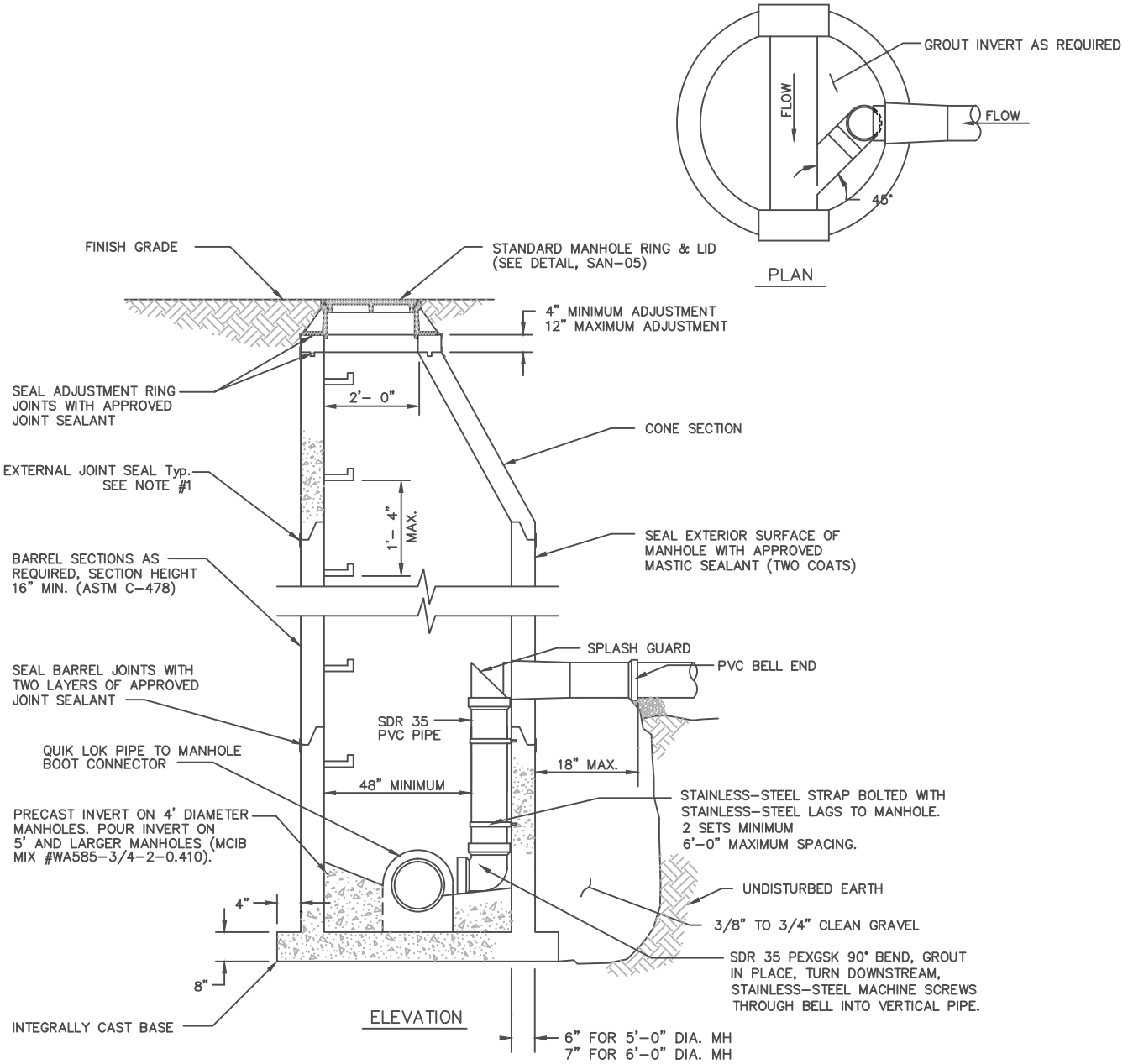
Blue Springs Missouri

STANDARD DETAILS

PRECAST SEWER MANHOLE

REVISIONS			
NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE
2	04/18	TSD	GENERAL UPDATE

DRAWN BY:	SPJ	DATE:	1–26–93
DETAIL NO.:	SAN–01	SCALE:	NO SCALE
APPROVED BY:			



STANDARD DROP MANHOLE

NOTES;
1. ALL CONCRETE JOINTS, INCLUDING ADJUSTMENT RING(S), SHALL HAVE CONSEAL CS-212 OR INFI-SHIELD 6" GATOR WRAP INSTALLED OR APPROVED EQUAL.
2. ALL MANHOLES SHALL BE VACUUM TESTED.
3. BASE TO BE SET ON 6" OF COMPACTED GRANULAR MATERIAL.
4. MANHOLE ADJUSTING RINGS IN PAVEMENT SHALL BE 4 OR 6 INCHES THICK AND BE EAST JORDAN IRON WORKS INFRA-RISER® RUBBER COMPOSITE OR APPROVED EQUAL. FOR NON PAVEMENT APPLICATION USE LADTECH HDPE OR APPROVED EQUAL.
5. ALL CONCRETE SHALL BE CORROSION RESISTANT USING CONSHIELD ANTIMICROBIAL ADDITIVE WITH CONTINT COLORANT ADDED.

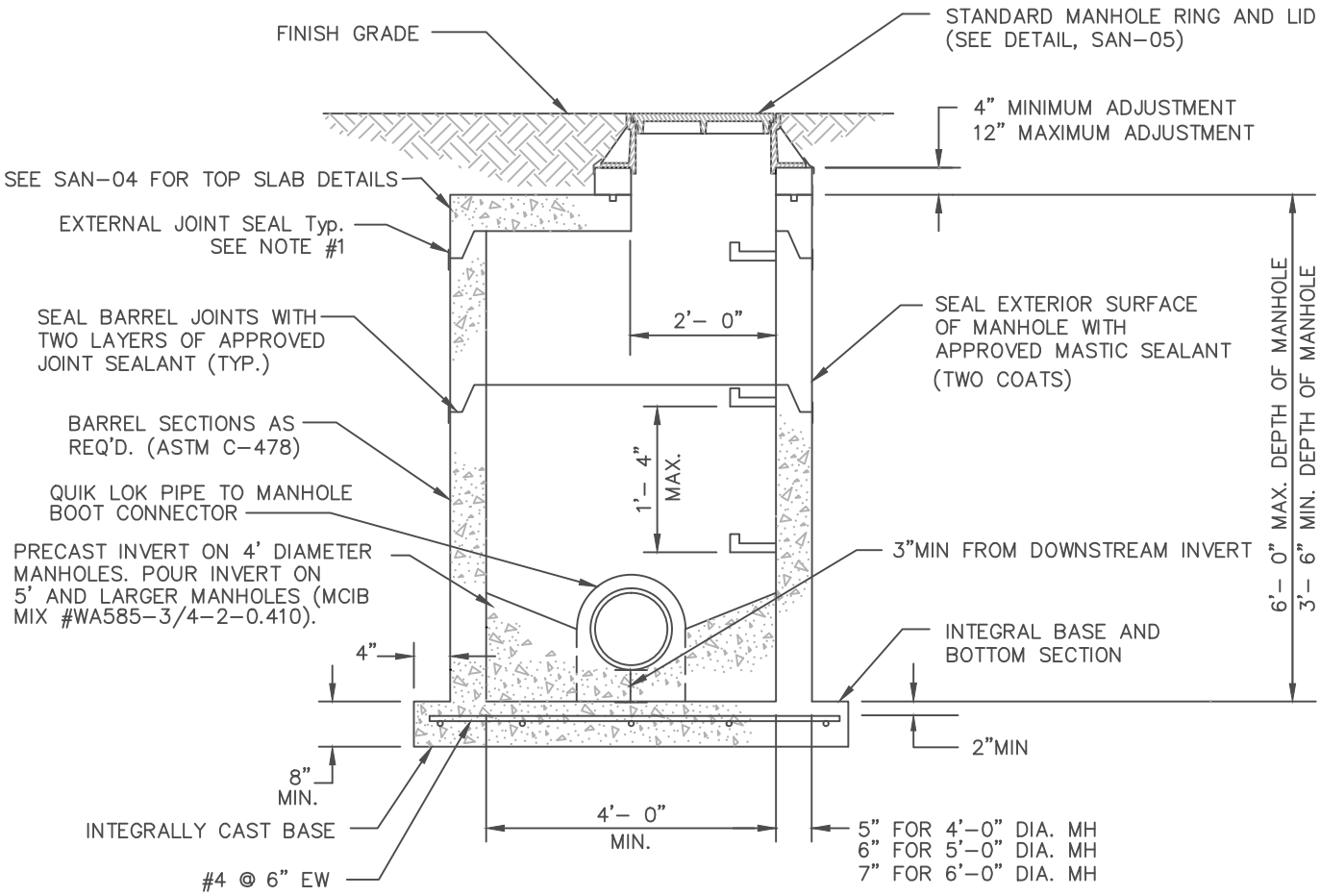
Blue Springs Missouri

STANDARD DETAILS

DROP SEWER MANHOLE

REVISIONS			
NO.	DATE	BY	REMARKS
1	04/06	CAY	GENERAL UPDATE
2	01/14	BM	GENERAL UPDATE

DRAWN BY:	SPJ	DATE:	1-26-93
DETAIL NO.:	SAN-02	SCALE:	NO SCALE
APPROVED BY:			



STANDARD SHALLOW MANHOLE

NOTES;
1. ALL CONCRETE JOINTS, INCLUDING ADJUSTMENT RING(S), SHALL HAVE CONSEAL CS–212 OR INFI–SHIELD 6" GATOR WRAP INSTALLED OR APPROVED EQUAL.
2. ALL MANHOLES SHALL BE VACUUM TESTED.
3. BASE TO BE SET ON 6" OF COMPACTED GRANULAR MATERIAL.
4. MANHOLE ADJUSTING RINGS IN PAVEMENT SHALL BE 4 OR 6 INCHES THICK AND BE EAST JORDAN IRON WORKS INFRA–RISER RUBBER COMPOSITE OR APPROVED EQUAL. FOR NON PAVEMENT APPLICATION USE LADTECH HDPE OR APPROVED EQUAL.
5. ALL CONCRETE SHALL BE CORROSION RESISTANT USING CONSHIELD ANTIMICROBIAL ADDITIVE WITH CONTINT COLORANT ADDED.

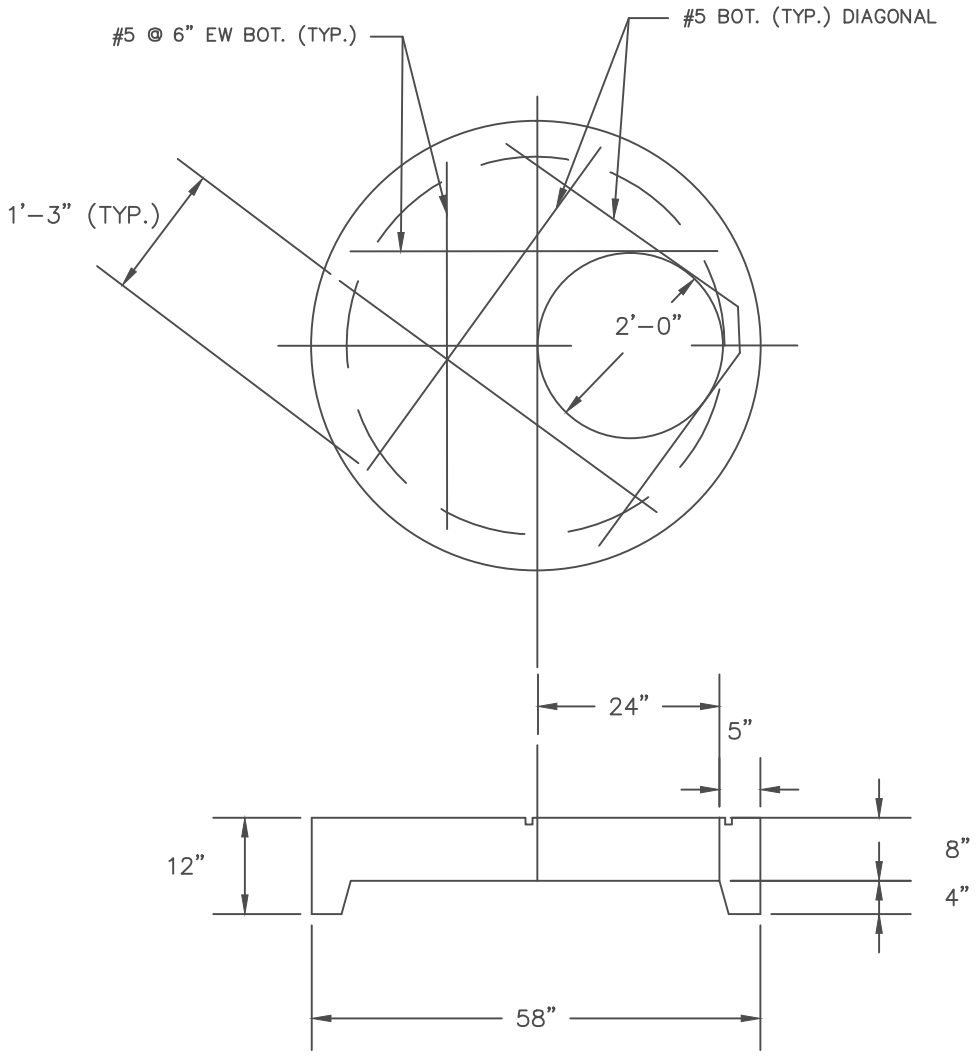
Blue Springs Missouri

STANDARD DETAILS

SHALLOW SEWER MANHOLE

REVISIONS			
NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE
2	04/18	TSD	GENERAL UPDATE

DRAWN BY:	SPJ	DATE:	1–26–93
DETAIL NO.:	SAN–03	SCALE:	NO SCALE
APPROVED BY:			



TOP SLAB FOR 48" STANDARD PRECAST SHALLOW SEWER MANHOLE DETAIL

NOTE: ALL CONCRETE SHALL BE CORROSION RESISTANT USING CONSHIELD ANTIMICROBIAL ADDITIVE WITH CONTINT COLORANT ADDED.

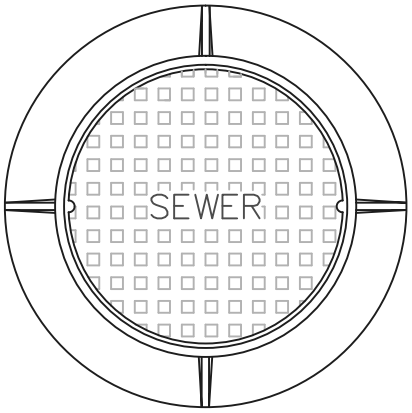
Blue Springs Missouri

STANDARD DETAILS

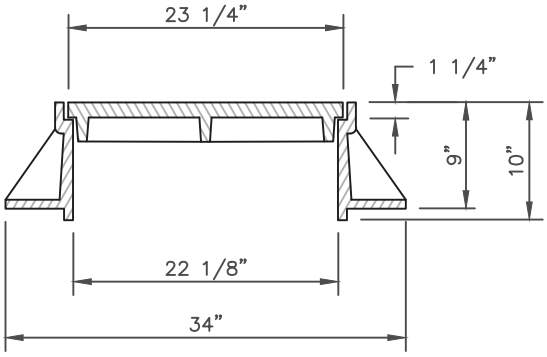
SHALLOW MANHOLE TOP SLAB

REVISIONS			
NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE
2	04/18	TSD	GENERAL UPDATE

DRAWN BY:	PWC	DATE:	09/25/98
DETAIL NO.:	SAN-04	SCALE:	NO SCALE
APPROVED BY:			



APPROVED RING AND LID	
CLAY & BAILEY	2008
DEETER	1315
NEENAH	R-1736
CLAY & BAILEY	2014
GCI	2205
EJ	V1383



NOTE: MINIMUM LID WEIGHT = 135 lb

MANHOLE RING AND LID DETAIL

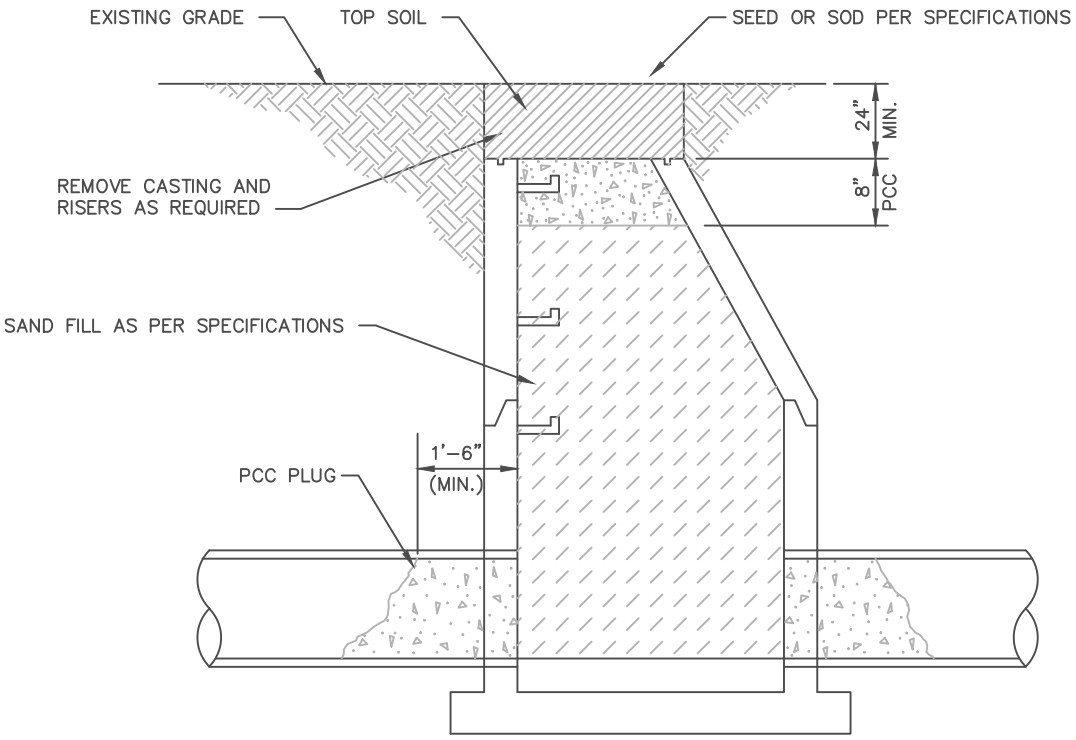
Blue Springs Missouri

STANDARD DETAILS

SANITARY SEWER RING & LID

REVISIONS			
NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE
2	04/18	TSD	GENERAL UPDATE

DRAWN BY:	SPJ	DATE:	1-22-93
DETAIL NO.:	SAN-05	SCALE:	NO SCALE
APPROVED BY:			



MANHOLE ABANDONMENT DETAIL

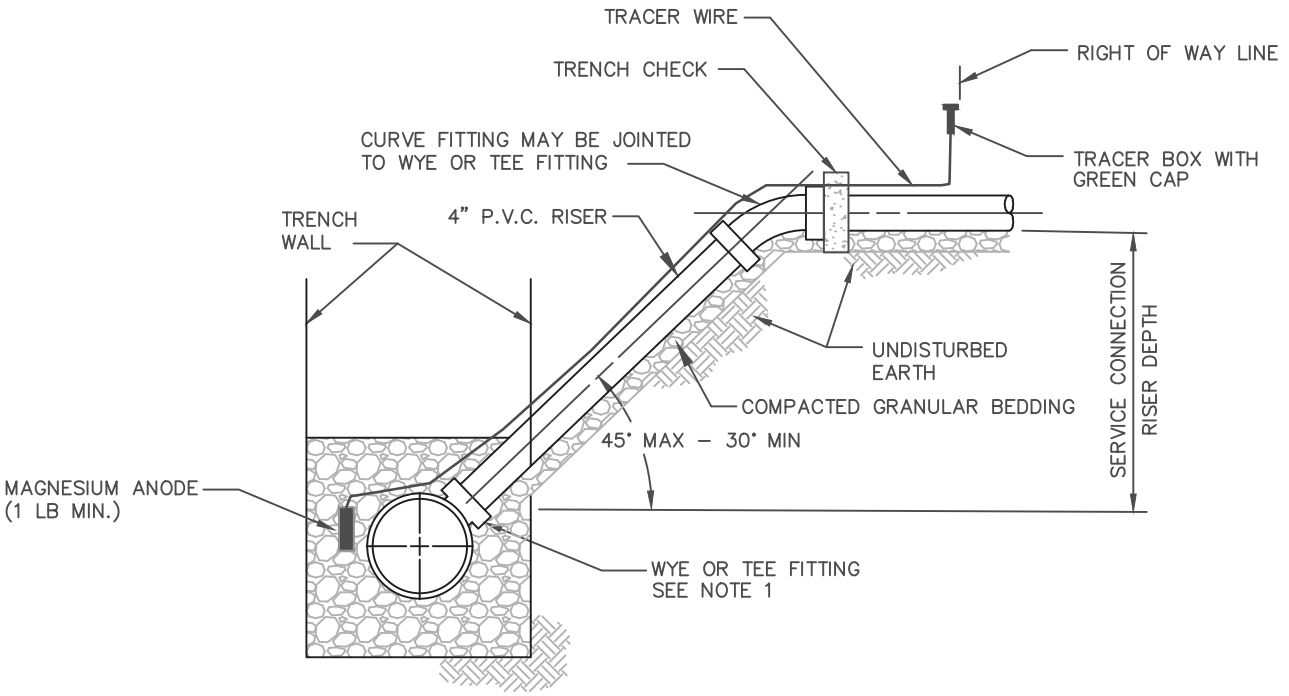
Blue Springs Missouri

STANDARD DETAILS

MANHOLE ABANDONMENT

REVISIONS			
NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE

DRAWN BY:	SPJ	DATE:	1-22-93
DETAIL NO.:	SAN-06	SCALE:	NO SCALE
APPROVED BY:			



SEWER SERVICE CONNECTION DETAIL

NOTES:
1. WHEN THREE OR MORE SEWER SERVICE CONNECTIONS ARE NEEDED WITHIN A TWENTY FOOT SECTION OF SEWER MAIN, INSERTA–TEE BRAND CONNECTORS OR APPROVED EQUAL MUST BE USED WITH 2' SPACING MINIMUM. NO CONNECTIONS ALLOWED WITHIN 2' OF THE PIPE JOINT.
2. SEWER SERVICE LINE SHALL BE CONSTRUCTED OF SDR 26 PVC PIPE AND HAVE A SLOPE OF AT LEAST 2%.
3. SEWER SERVICE LINE SHALL EXTEND TO 10' BEYOND THE RIGHT OF WAY OR EASEMENT LINE FOR NEW CONSTRUCTION.
4. ALL NEW CONSTRUCTION OF SEWER STUBS AND TRACER BOXES SHALL BE TEMPORARILY MARKED WITH A MARKING STAKE, 48" ABOVE GRADE AND PAINTED GREEN.
5. IMPERVIOUS TRENCH CHECKS SHALL BE PLACED ON BUILDING SEWER STUBS (AT LEAST 5' AWAY FROM THE SANITARY MAIN). TRENCH CHECKS SHALL EXTEND 6" BELOW THE BOTTOM OF THE PIPE. LENGTH SHALL BE A MINIMUM OF 12". THE HEIGHT OF THE TRENCH CHECK SHALL EXTEND 12" ABOVE THE TOP OF THE PIPE. THE WIDTH OF THE TRENCH CHECK SHALL BE THE WIDTH OF THE TRENCH.
6. TRACER WIRE IS REQUIRED ON ALL SANITARY SERVICE LINES FROM THE SEWER MAIN TO THE RIGHT OF WAY LINE. TRACER WIRE SHALL BE COPPERHEAD REINFORCED TRACER WIRE, #12 AWG, WITH APWA GREEN COLORED INSULATION OR APPROVED EQUAL. TRACER WIRE CAN BE SPLICED USING COPPERHEAD SNAKEBITE TWIST LOCK LSC CONNECTORS. TRACER WIRE SHALL BE TAPED TO THE TOP OF THE SEWER SERVICE STUB WITH PLASTIC TAPE EVERY 5'
7. COPPERHEAD SNAKBITE TRACER BOXES SHALL BE USED OR APPROVED EQUAL. TRACER BOX SHALL BE COLOR CODED APWA GREEN. TRACER BOX SHALL BE FLUSH WITH FINISH GRADE, DIRECTLY OVER THE SANITARY SEWER STUB AT THE RIGHT OF WAY LINE.

BREAK–IN SEWER CONNECTIONS ONLY:

1. ARE ONLY ALLOWED WITH PRIOR APPROVAL FROM THE CITY OF BLUE SPRINGS PUBLIC WORKS DEPARTMENT (816)228–0195.
2. MUST USE INSERTA TEE BRAND CONNECTOR INSTALLED USING MANUFACTURERS SPECIFICATIONS OR APPROVED EQUAL.
3. SHALL BE INSPECTED BY PUBLIC WORKS PRIOR TO BACKFILLING.

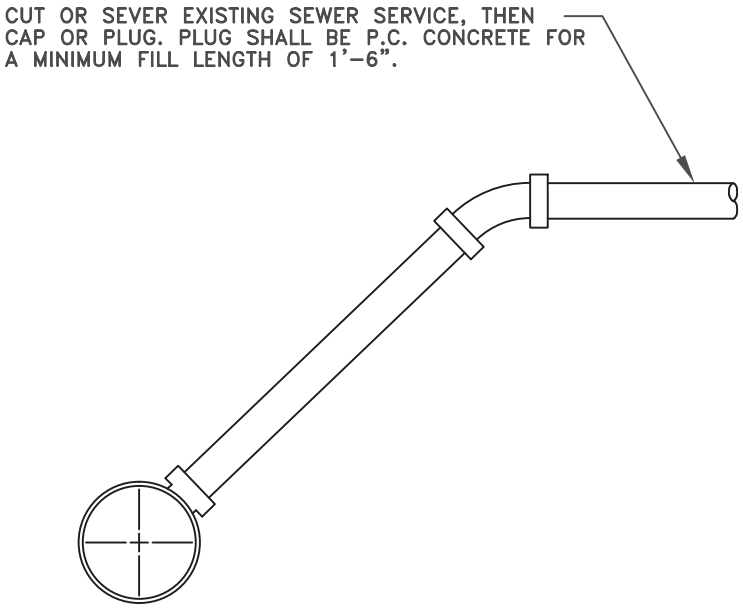
Blue Springs Missouri

STANDARD DETAILS

SANITARY SEWER SERVICE

REVISIONS			
NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE
2	04/18	TSD	GENERAL UPDATE

DRAWN BY:	SPJ	DATE:	10–12–92
DETAIL NO.:	SAN–07	SCALE:	NO SCALE
APPROVED BY:			



SANITARY SEWER SERVICE DEMOLITION

NOTE: CONTACT BLUE SPRINGS PUBLIC WORKS AT (816)228-0195 BEFORE PERFORMING DISCONNECTION.

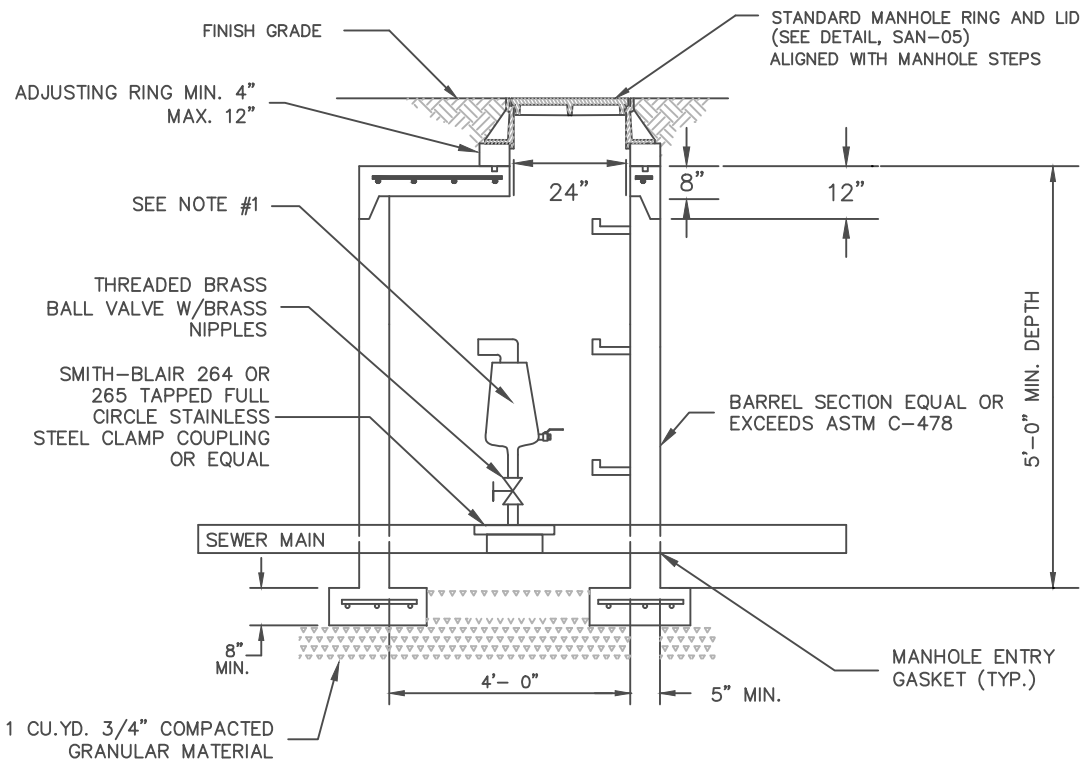
Blue Springs Missouri

STANDARD DETAILS

SEWER SERVICE DEMOLITION

REVISIONS			
NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE

DRAWN BY:	SPJ	DATE:	12-17-93
DETAIL NO.:	SAN-08	SCALE:	NO SCALE
APPROVED BY:			



SEWER COMBINATION AIR/VACUUM ASSEMBLY

NOTES:

1. COMBINATION AIR & VACUUM VALVE ASSEMBLY – A.R.I. D-025 FOR 150 PSI AND BELOW, A.R.I. D-020 ABOVE 150 PSI, OR NSF RATED APPROVED EQUAL.
2. VAULT SHALL BE STANDARD PRECAST SHALLOW TYPE MANHOLE, SEE SAN-03.
3. MANHOLE ADJUSTING RINGS SHALL BE CONCRETE FOR PAVEMENT APPLICATIONS. FOR NON PAVEMENT APPLICATIONS USE LADTECH HDPE OR APPROVED EQUAL.
4. ALL CONCRETE SHALL BE CORROSION RESISTANT USING CONSHIELD ANTIMICROBIAL ADDITIVE WITH CONTINT COLORANT ADDED.

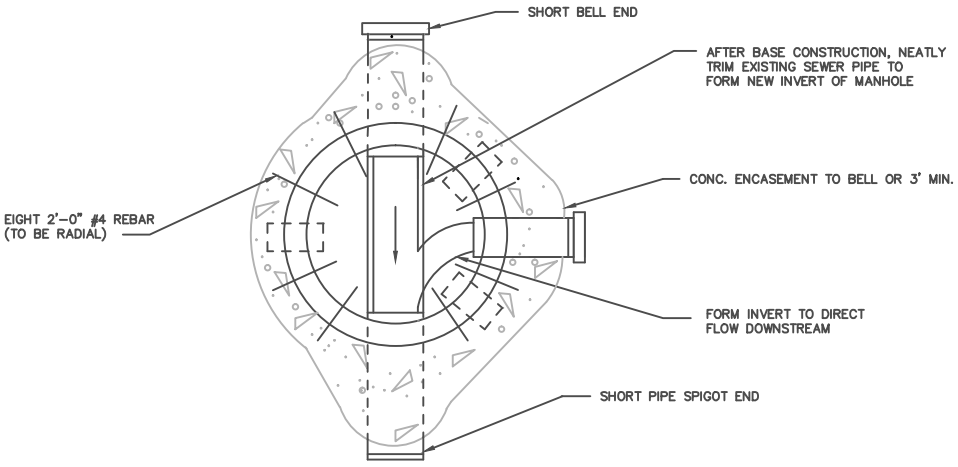
Blue Springs Missouri

STANDARD DETAILS

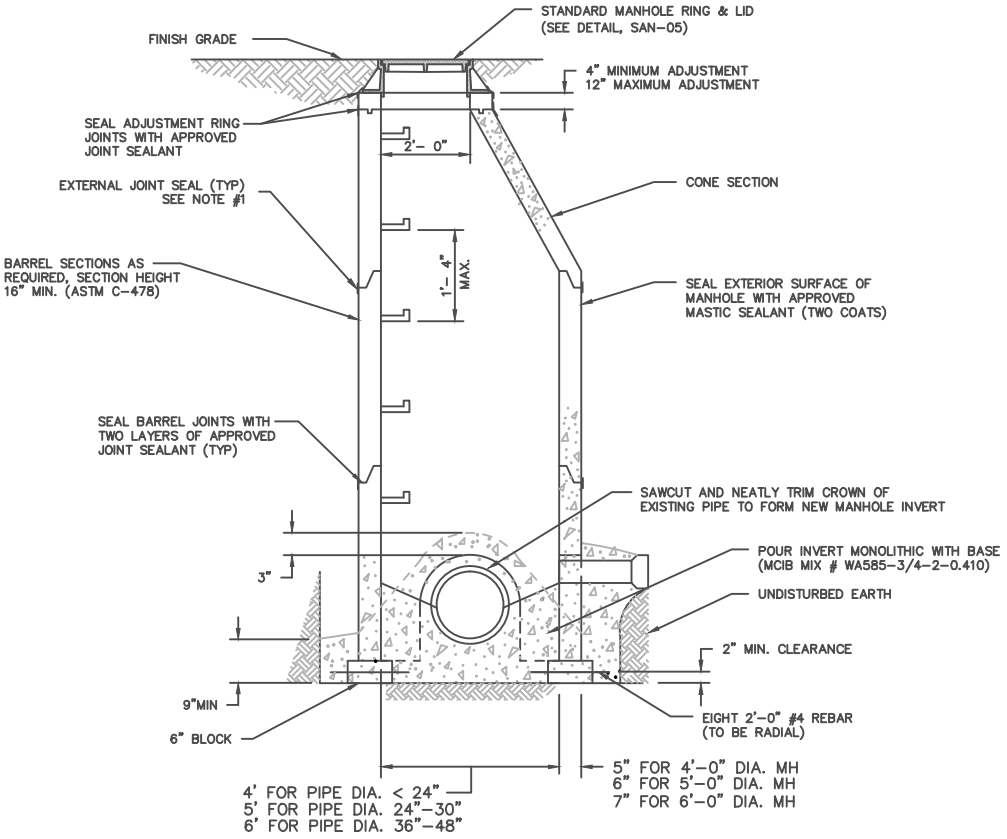
AIR & VACUUM VALVE ASSEMBLY

REVISIONS			
NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE

DRAWN BY:	PWC	DATE:	03/30/06
DETAIL NO.:	SAN-09	SCALE:	NO SCALE
APPROVED BY:			



PLAN VIEW



STANDARD PRECAST MANHOLE-EXISTING SEWER

NOTES;
1. ALL CONCRETE JOINTS, INCLUDING ADJUSTMENT RING(S), SHALL HAVE CONSEAL CS-212 OR INFI-SHIELD 6" GATOR WRAP INSTALLED OR APPROVED EQUAL.
2. ALLOW CONCRETE BASE TO CURE 5 HOURS MINIMUM PRIOR TO BACKFILL.
3. BASE TO BE SET ON 6" OF COMPACTED GRANULAR MATERIAL.
4. MANHOLE ADJUSTING RINGS IN PAVEMENT SHALL BE 4 OR 6 INCHES THICK AND BE EAST JORDAN IRON WORKS INFRA-RISER RUBBER COMPOSITE OR APPROVED EQUAL. FOR NON PAVEMENT APPLICATIONS USE LADTECH HDPE OR APPROVED EQUAL.
5. ALL PRECAST CONCRETE SHALL BE CORROSION RESISTANT USING CONSHIELD ANTIMICROBIAL ADDITIVE WITH CONTINT COLORANT ADDED.

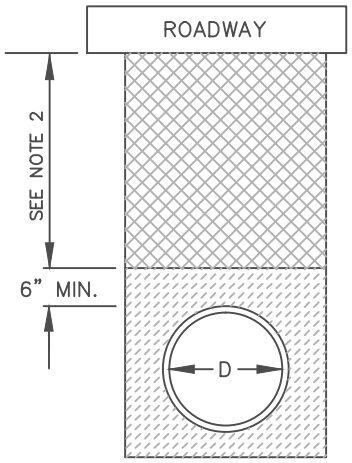
Blue Springs Missouri

STANDARD DETAILS

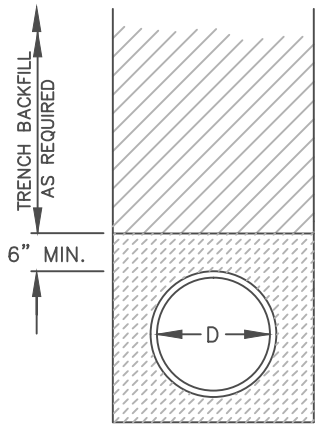
MANHOLE @ EXIST. SAN. SEW.

REVISIONS			
NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE
2	04/18	TSD	GENERAL UPDATE

DRAWN BY:	SPJ	DATE:	2-3-93
DETAIL NO.:	SAN-10	SCALE:	NO SCALE
APPROVED BY:			



SANITARY SEWER EMBEDMENT BENEATH ROADWAY



TYPICAL SANITARY SEWER EMBEDMENT

LEGEND	
D	NOMINAL PIPE DIAMETER
	TRENCH BACKFILL
	TAMPED GRANULAR BACKFILL (KDOT AB-3)
	GRANULAR BEDDING

MINIMUM PIPE CLEARANCES (IN)		
D	PIPE SIDE CLEARANCE[2] (SOIL/ROCK)	PIPE BOTTOM CLEARANCE (SOIL/ROCK)
0"-18"	6/6	6/6
21"-30"	8/9	6/9

SANITARY SEWER BEDDING GRADATION LIMITS (% PASSING)	
SIEVE SIZE	3/4"
1"	100
3/4"	90-100
3/8"	20-55
NO. 4	0-5
NO. 8	0-2

NOTES: 1. GRANULAR BEDDING SHALL MEET THE GRADATION REQUIREMENTS OF THE TABLE ABOVE. MATERIAL TO BE PLACED IN NOT MORE THAN 6" LAYERS AND COMPACTED BY SLICING WITH A SHOVEL OR BY VIBRATING.

2. TAMPED GRANULAR BACKFILL (KDOT AB-3) THIS MATERIAL SHALL BE USED FOR ALL EXISTING AND PROPOSED STREET CROSSINGS FOR MAIN AND SERVICE LATERAL CONSTRUCTION.

3. TRENCH BACKFILL SHALL BE FINELY DIVIDED MATERIAL FREE FROM DEBRIS AND STONES, COMPACTED TO 95% MAXIMUM DENSITY.

SANITARY SEWER EMBEDMENT DETAILS

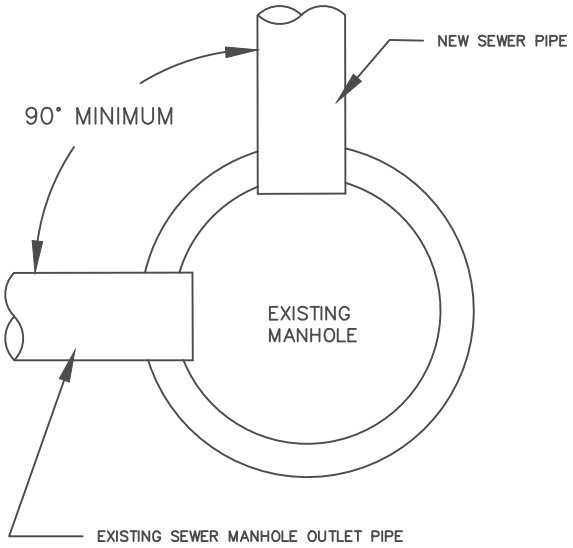
Blue Springs Missouri

STANDARD DETAILS

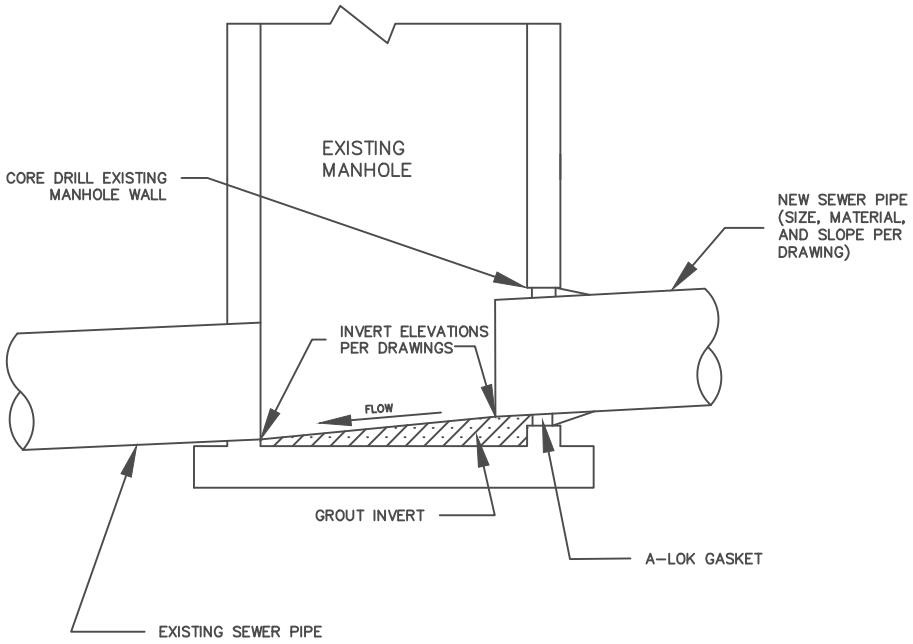
SANITARY SEWER EMBEDMENT

REVISIONS			
NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE
2	04/18	TSD	GENERAL UPDATE

DRAWN BY: SPJ		DATE:	10-12-92
DETAIL NO.: SAN-11		SCALE:	NO SCALE
APPROVED BY:			



PLAN VIEW



SECTION VIEW

TYPICAL CONNECTION TO EXISTING MANHOLE

NOTES: 1. NEW PIPE SHALL BE A MINIMUM OF 90° FROM MANHOLE OUTLET PIPE.
2. INVERT TROUGH SHALL BE SLOPED A MINIMUM OF 5% AND A MAXIMUM OF 50%.

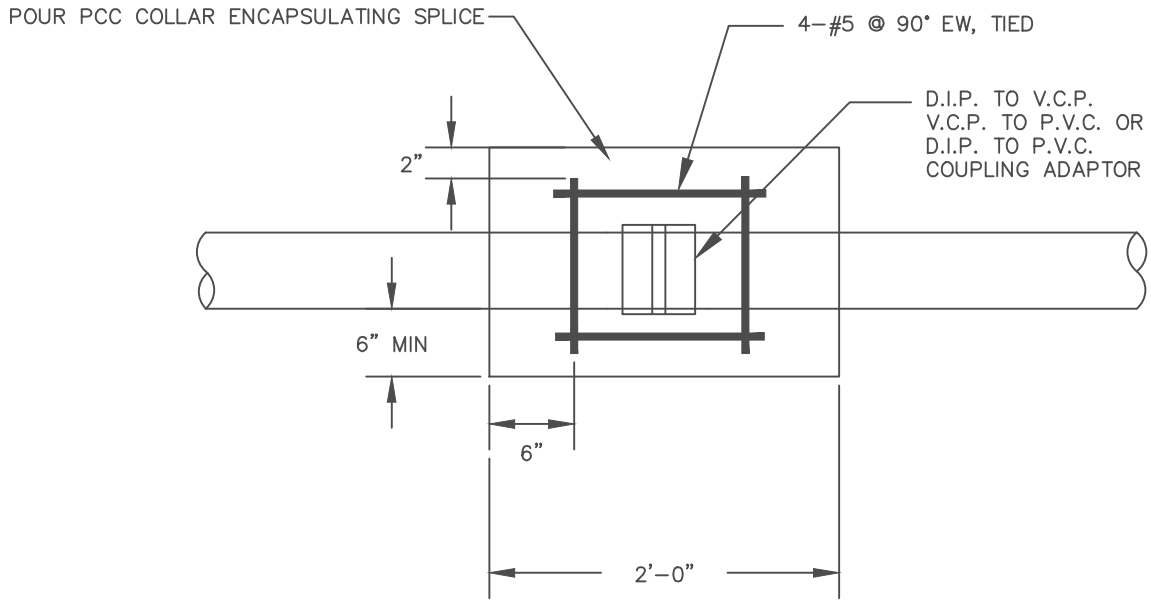
Blue Springs Missouri

STANDARD DETAILS

TYP CONN TO EXIST MANHOLE

REVISIONS			
NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE

DRAWN BY:	PWC	DATE:	09/15/98
DETAIL NO.:	SAN-12	SCALE:	NO SCALE
APPROVED BY:			



CONCRETE COLLAR DETAIL

(FOR JOINTING TWO DIFFERENT TYPES OF PIPE)

NOTE: CONCRETE MIX DESIGN SHALL BE MCIB MIX # WA535–3/4–2–0.410.

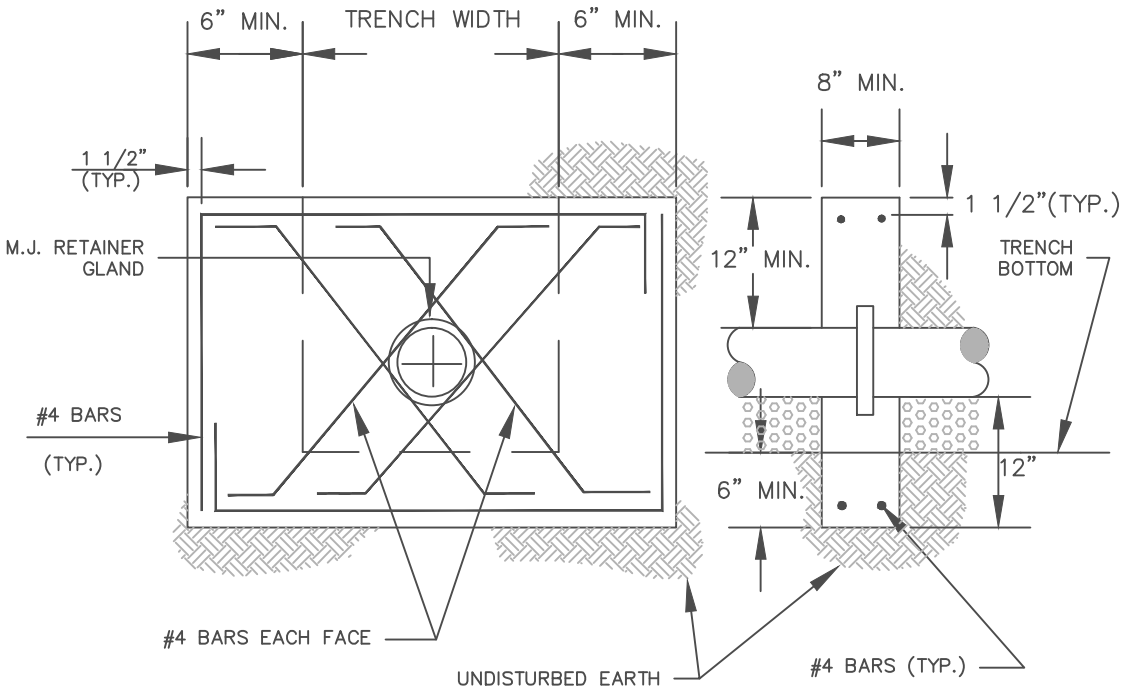
Blue Springs Missouri

STANDARD DETAILS

CONCRETE COLLAR

REVISIONS			
NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE

DRAWN BY:	PWC	DATE:	09/15/98
DETAIL NO.:	SAN–13	SCALE:	NO SCALE
APPROVED BY:			



CONCRETE THRUST COLLAR DETAIL

NOTES: 1. CONCRETE THRUST COLLAR TO BE INSTALLED ON GRAVITY SEWER LINES LAID AT 20% SLOPES OR GREATER, AT INTERVALS INDICATED BY THE ENGINEER ON SANITARY SEWER PROFILE DRAWINGS.

2. CONCRETE MIX DESIGN SHALL BE MCIB MIX # WA535-3/4-2-0.410.

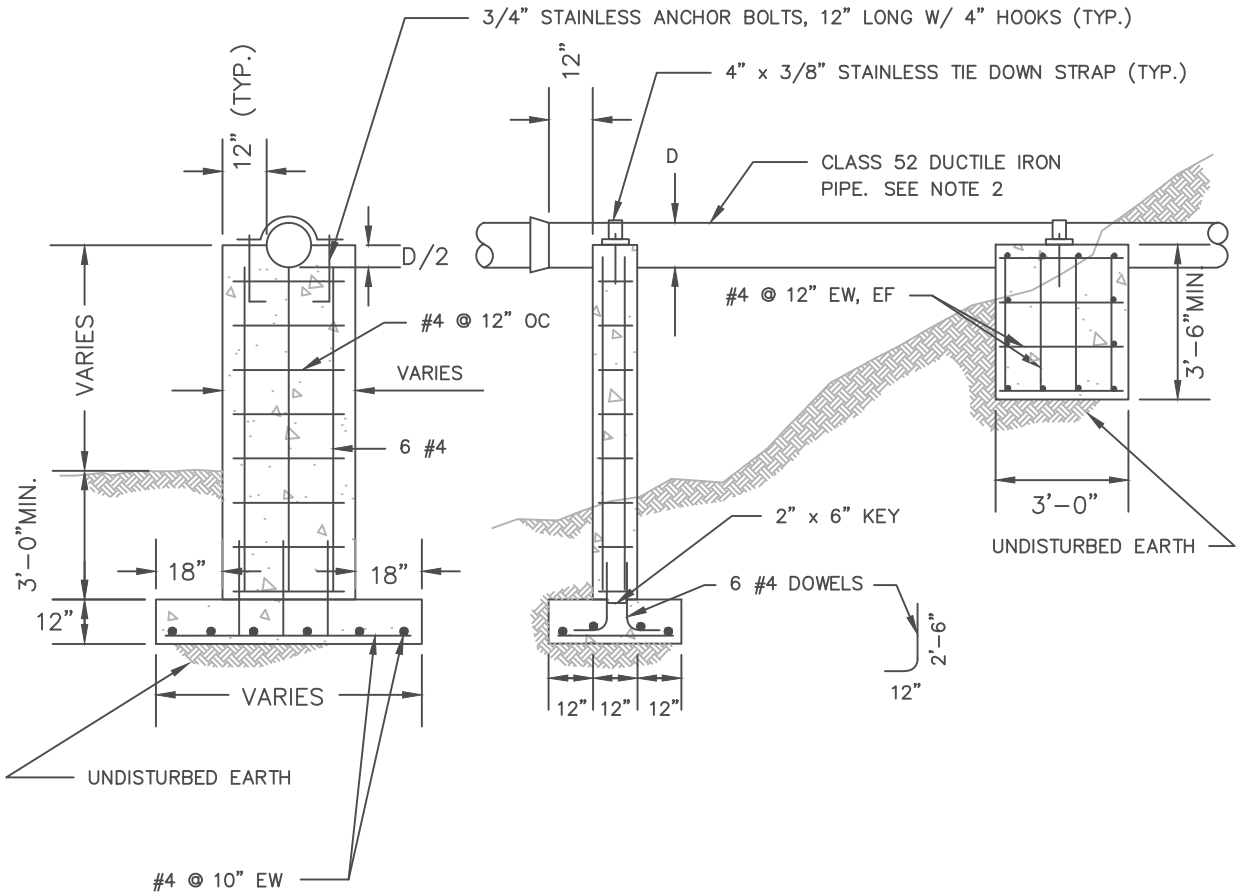
Blue Springs Missouri

STANDARD DETAILS

CONCRETE THRUST COLLAR

REVISIONS			
NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE

DRAWN BY:	PWC	DATE:	09/24/98
DETAIL NO.:	SAN-14	SCALE:	NO SCALE
APPROVED BY:			



TYPE 1 AERIAL CROSSING DETAIL

NOTES: 1. ONE PIER REQUIRED FOR EACH LENGTH OF PIPE.
2. DUCTILE IRON PIPE AND FITTINGS SHALL BE HYDROGEN SULFIDE RESISTANT LINED AND CONFORM TO APWA, LATEST VERSION.

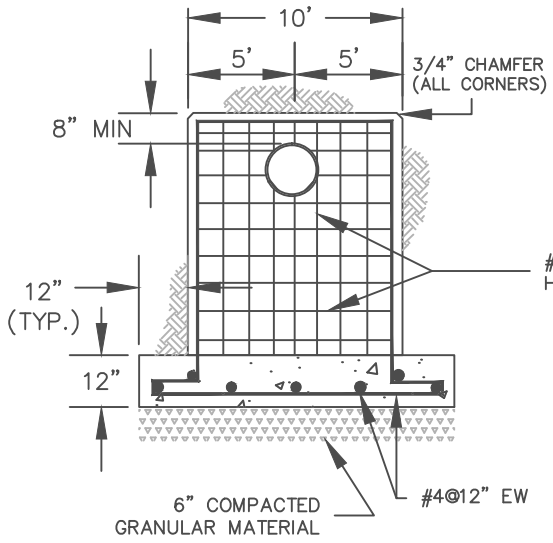
Blue Springs Missouri

STANDARD DETAILS

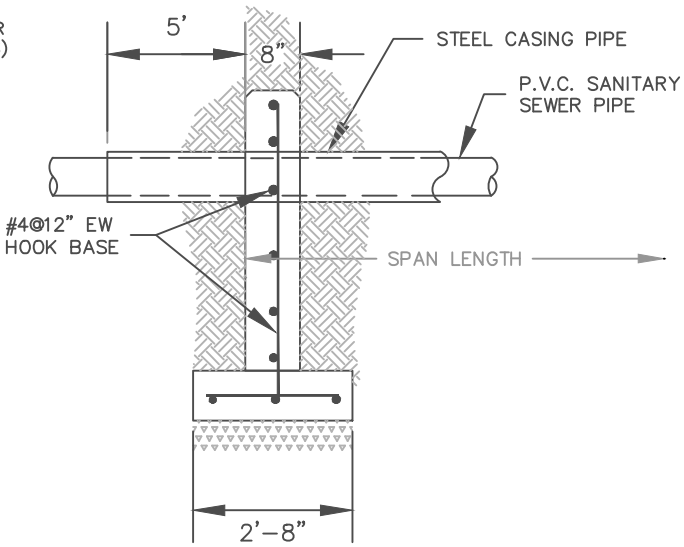
TYPE 1 AERIAL CROSSING

REVISIONS			
NO.	DATE	BY	REMARKS
1	01/14	BM	GENERAL UPDATE
2	04/18	TSD	GENERAL UPDATE

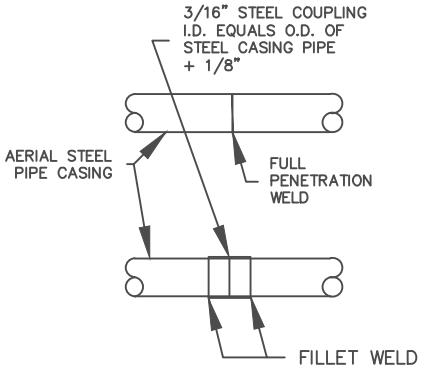
DRAWN BY:	PWC	DATE:	10/01/98
DETAIL NO.:	SAN-15	SCALE:	NO SCALE
APPROVED BY:			



ELEVATION



SECTION



SPLICE DETAIL

SEWER PIPE DIA. IN.	CASING PIPE DIA.IN.	WALL IN.	MAXIMUM SPAN FEET
8	16	0.375	50
10	18	0.375	50
12	20	0.375	50

CLEAR SPAN TYPE II AERIAL CROSSING DETAIL

NOTES:

1. CONTRACTOR SHALL INDICATE TO ENGINEER SPLICE OPTION TO BE UTILIZED. SEE SPECIFICATIONS.
2. CARRIER PIPE SPACERS SHALL BE RACI OR APPROVED EQUAL INSTALLED PER MANUFACTURERS SPECIFICATIONS.

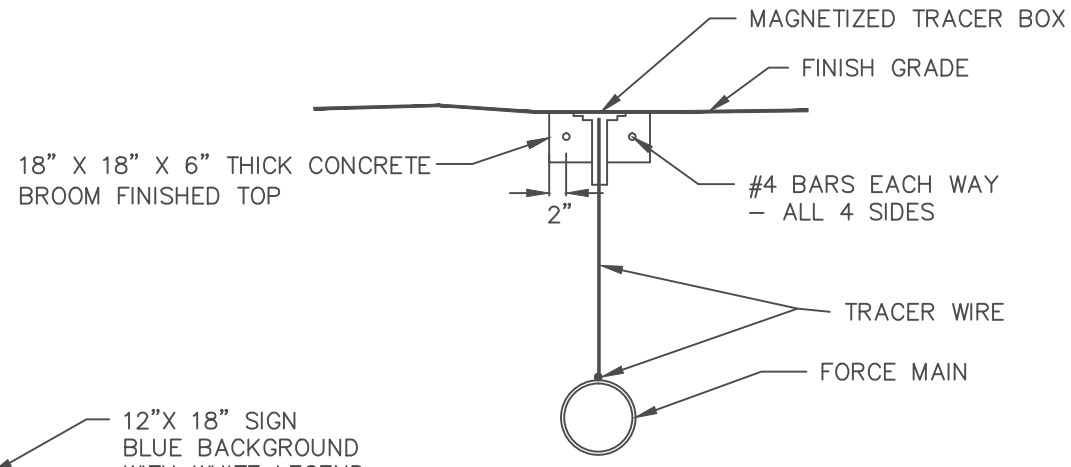
Blue Springs Missouri

STANDARD DETAILS

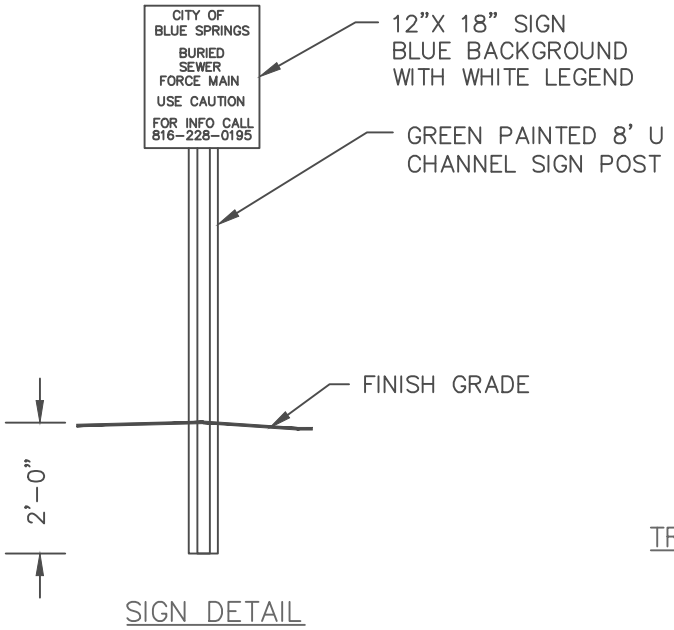
TYPE II AERIAL CROSSING

REVISIONS			
NO.	DATE	BY	REMARKS
1	04/06	CAY	GENERAL UPDATE
2	01/14	BM	GENERAL UPDATE

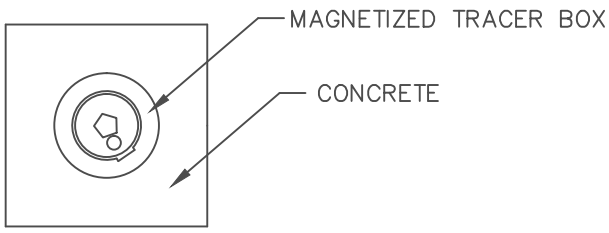
DRAWN BY:	PWC	DATE:	09/22/98
DETAIL NO.:	SAN-16	SCALE:	NO SCALE
APPROVED BY:			



TRACER WIRE & BOX SECTION VIEW



SIGN DETAIL



TRACER BOX PLAN VIEW

SEWER TRACER WIRE DETAIL

NOTES:
1. TRACER WIRE INSTALLATION IS REQUIRED ON ALL SEWER FORCE MAINS.
2. TRACER WIRE SHALL RUN CONTINUOUSLY ABOVE THE FORCE MAIN. WIRE SHALL BE COPPERHEAD REINFORCED TRACER WIRE, #12 AWG, WITH APWA GREEN COLORED INSULATION OR APPROVED EQUAL. TRACER WIRE CAN BE SPLICED WITH COPPERHEAD SNAKEBITE TWIST LOCK LSC CONNECTORS.
3. COPPERHEAD SNAKEPIT MAGNETIZED TRACER BOXES SHALL BE USED OR APPROVED EQUAL. TRACER BOX SHALL BE COLOR CODED WITH APWA GREEN.
4. THERE SHALL BE A SIGN AND A TRACER BOX INSTALLED AT THE BEGINNING AND END OF EVERY FORCE MAIN INSTALLATION AND A MAXIMUM OF EVERY 500' IN BETWEEN.
5. TRACER BOX SHALL ME MOUNTED FLUSH WITH THE FINISH GRADE, DIRECTLY OVER THE FORCE MAIN.
6. TRACER WIRE SHALL BE TAPED TO THE TOP OF THE FORCE MAIN EVERY 10' WITH PLASTIC TAPE.
7. SIGN SHALL BE INSTALLED WITHIN 1' OF CONCRETE SURROUNDING TRACER BOX.

Blue Springs Missouri

STANDARD DETAILS

FORCE MAIN TRACER WIRE

REVISIONS			
NO.	DATE	BY	REMARKS
1	04/06	CAY	STYLE UPDATE
2	01/14	BM	GENERAL UPDATE

DRAWN BY:	PWC	DATE:	09/29/98
DETAIL NO.:	SAN–17	SCALE:	NO SCALE
APPROVED BY:			