

STANDARD

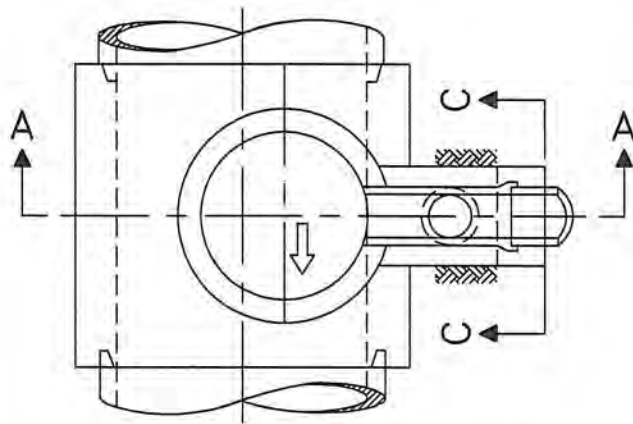


MSD
WASTEWATER
ENGINEERING

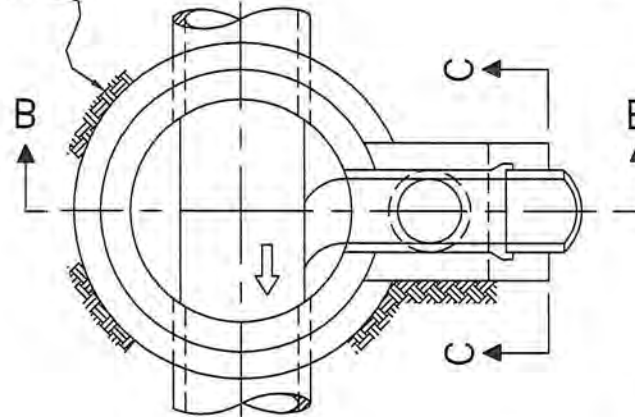
DRAWINGS

RYAN WELSH, P.E.

LAST UPDATE:
OCTOBER 2023



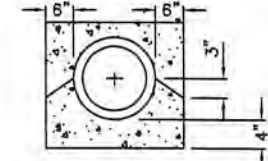
INDICATES
UNDISTURBED
EARTH



NOTES:

DROP MANHOLES SHALL ONLY
BE USED WHERE APPROVED
BY M.S.D.

THE SEAL BETWEEN PRE-CAST MANHOLE
BASE (RISER) AND INFLUENT AND/OR
EFFLUENT CONDUIT SHALL BE A RUBBER
GASKET, "A-LOK", "KOR-N-SEAL",
"DURA-SEAL" OR AN APPROVED EQUAL.

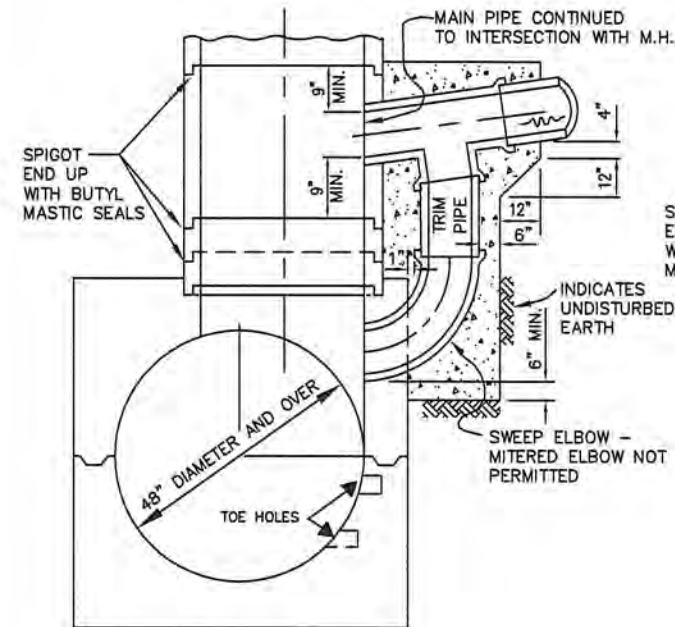


SECTION C-C

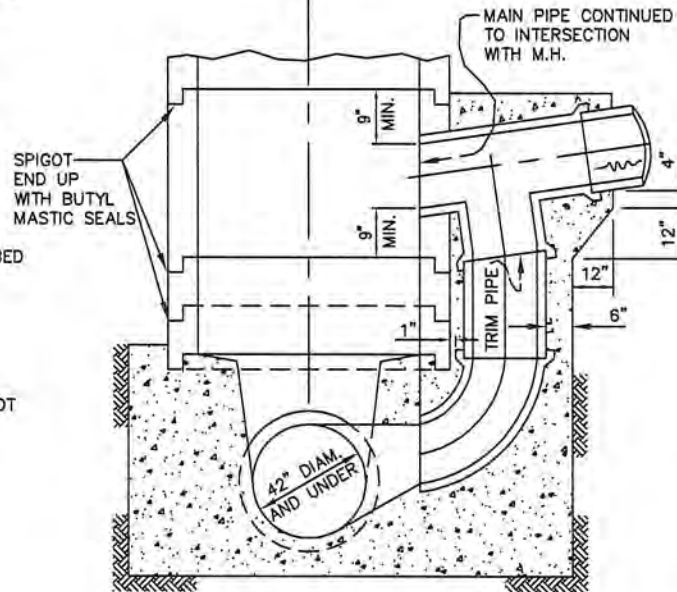
ALL OTHER CHARACTERISTICS ARE SIMILAR
TO STANDARD MANHOLE ACC. NO. 49037,
49040 OR 49049.

ALL CONCRETE SHALL BE
CLASS "C".

LIFT HOLES IN MANHOLES SHALL
BE SEALED WITH HYDRAULIC CEMENT



SECTION A-A
TYPE "D" OR "T"



SECTION B-B
TYPE "A", "P" OR "S"

DROP CONNECTIONS ON SANITARY SEWERS *	
CONDUIT SIZE	STACK SIZE
8"	8"
12"	8" MIN.
15" AND OVER	12" UNLESS OTHERWISE NOTED ON PLANS.

* ON COMBINED SEWERS, DROP CONNECTION
TO BE SAME SIZE AS MAIN LINE.

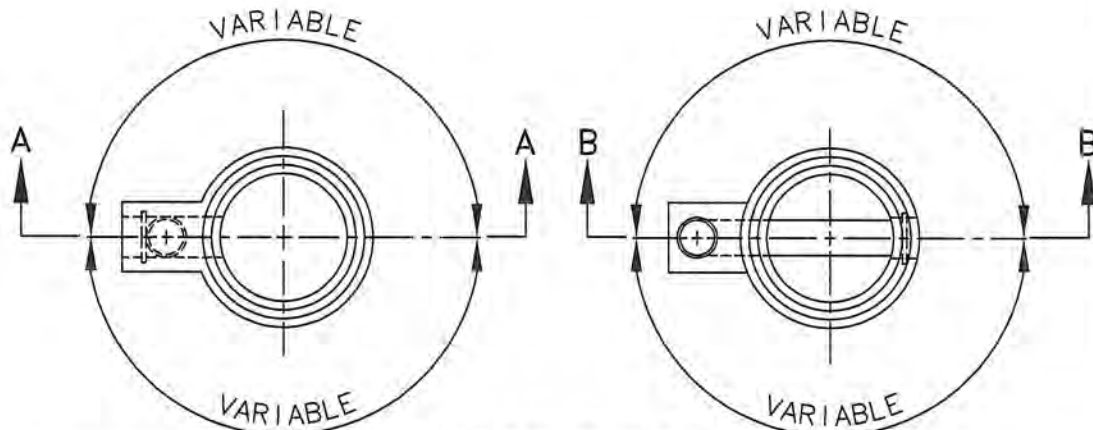
THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD
DROP MANHOLES

NO SCALE

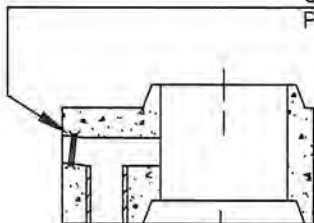
DATE: DEC. 2010

APPROVED:

Ralph Johnson
SEWERS CHIEF ENGINEER

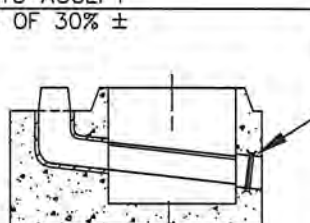


CAST IN @ SKEW OF 15° TO ACCEPT
PIPE INSTALLED @ GRADE OF 30% ±



SECTION A-A

PRECAST CONCRETE
DROP BARREL SECTION



SECTION B-B

PRECAST CONCRETE
DROP BASE SECTION

NOTES:

MANHOLE BASES SHALL BE INSTALLED ON A
6" MINIMUM GRAVEL BASE (#57 CLEAN WASHED TYPE#1).

THE SEAL BETWEEN PRE-CAST MANHOLE BASE (RISER)
AND INFLUENT AND/OR EFFLUENT CONDUIT SHALL
BE A RUBBER GASKET, "A-LOK", "KOR-N-SEAL",
"DURA-SEAL" OR AN APPROVED EQUAL.

NOTES:

REINFORCEMENT STEEL TO BE AS ACC. NO. 49056.

DROP MANHOLES SHALL ONLY BE USED
WHERE APPROVED BY M.S.D.

ALL OTHER CHARACTERISTICS ARE SIMILAR
TO ACC. NO. 49037 OR 49049.

ALL CONCRETE SHALL BE CLASS "C".

LIFT HOLES IN MANHOLES TO BE SEALED WITH
HYDRAULIC CEMENT.

INTERMEDIATE MANHOLE SECTIONS SHALL BE
PRECAST SECTIONS WITH THE DROP CAST AS
PART OF THE SECTION AND COMPATIBLE WITH
THE PRECAST BARREL AND BASE SECTIONS.

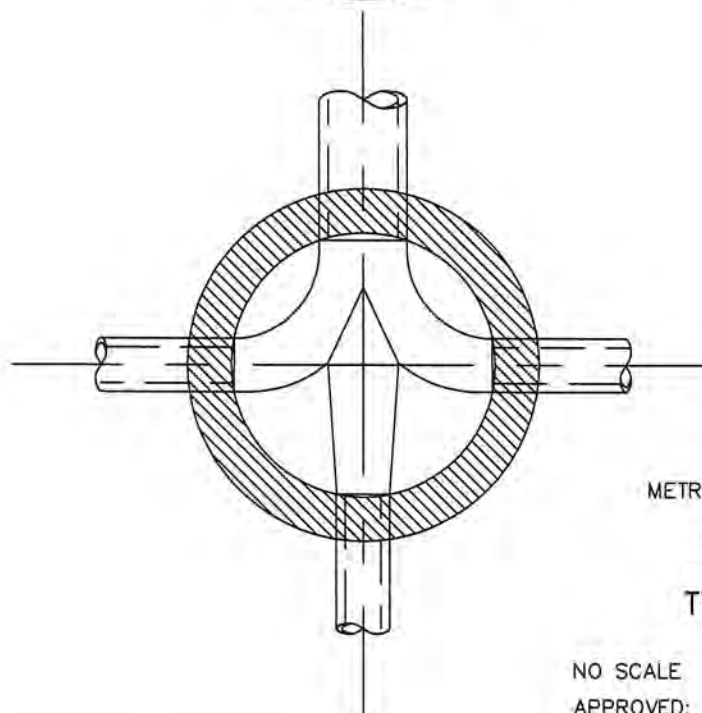
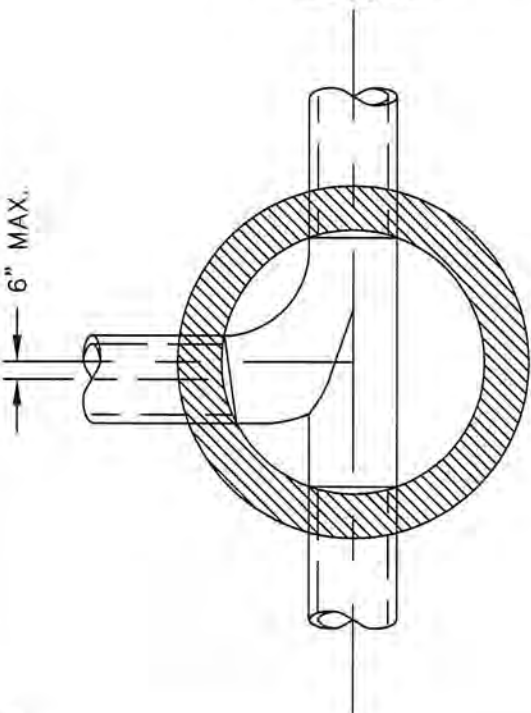
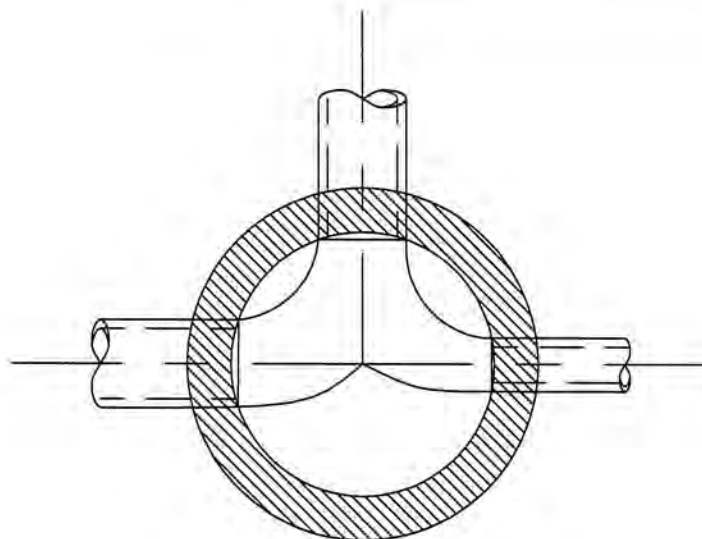
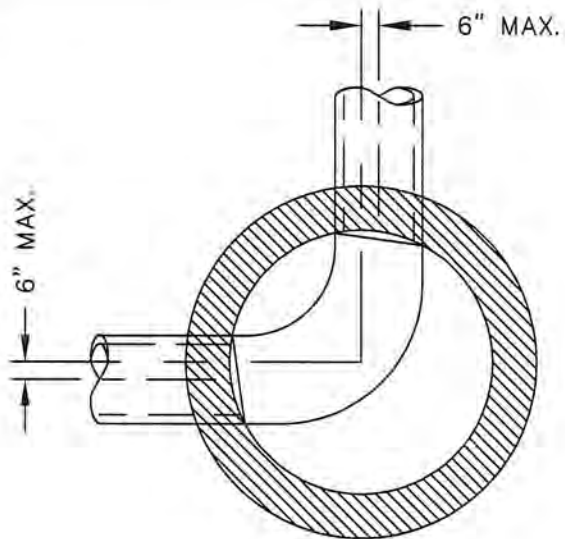
THE GASKET BETWEEN THE PRECAST BASE
AND RISERS SHALL MEET THE REQUIREMENTS
OF ASTM C-443 EXCEPT THAT ONLY
"O" RING AND PROFILE GASKETS ARE ACCEPTABLE.

DROP CONNECTIONS ON SANITARY SEWERS*	
CONDUIT SIZE	STACK SIZE
8"	8"
12"	8" MIN.
15" AND OVER	12" UNLESS OTHERWISE NOTED ON PLANS

* ON COMBINED SEWERS, DROP CONNECTION
TO BE SAME SIZE AS MAIN LINE.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD
PRECAST CONCRETE
DROP MANHOLE

NO SCALE DATE: DEC. 2010
APPROVED: *Ralph Johnston*
SEWERS CHIEF ENGINEER



THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI

TYPICAL INVERTS

NO SCALE

DATE: AUG., 2006

APPROVED:

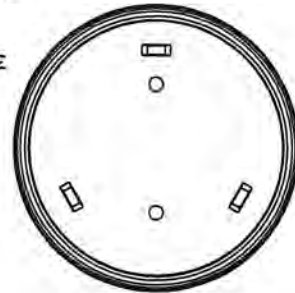
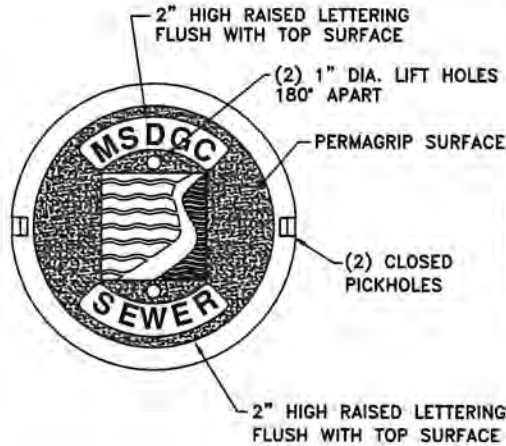
[Signature]
SEWERS CHIEF ENGINEER

T.R.S.

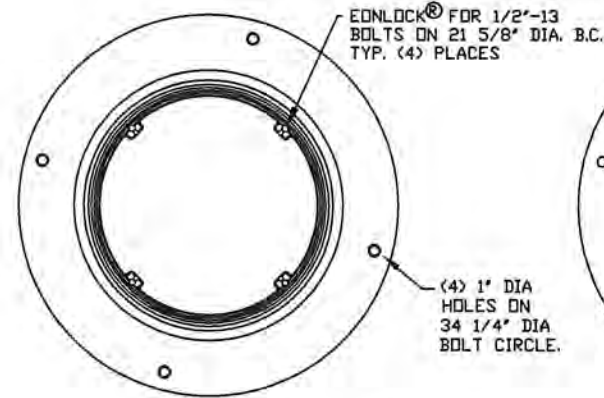
ACC. NO. 49004

LID SPEC: EAST JORDAN PRODUCT #00166565, 1665C OR EQUAL
 LID MATERIAL: CAST GRAY IRON ASTM A48, CLASS 35B
 LID FINISH: NO PAINT

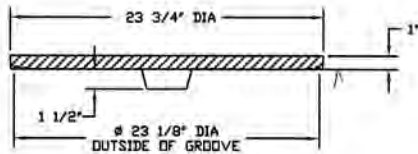
FRAME SPEC: EAST JORDAN PRODUCT #NCR07-2222B, 1665Z1PT, OR EQUAL
 FRAME MATERIAL: CAST GRAY IRON ASTM A48, CLASS 35B
 FRAME FINISH: NO PAINT



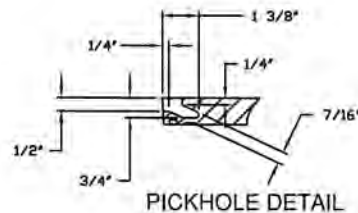
BOTTOM VIEW



BOTTOM VIEW

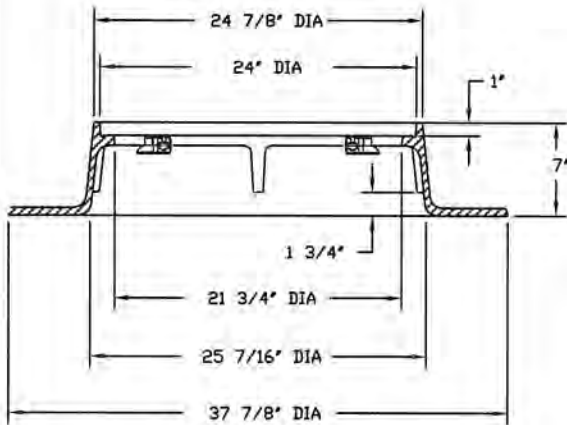
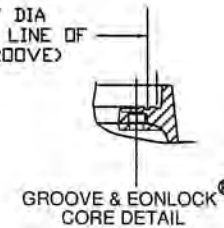


COVER SECTION



PICKHOLE DETAIL

22 5/8" DIA
(TO CENTER LINE OF
GASKET GROOVE)



FRAME SECTION

THIS FRAME (WITH EONLOCK® FUNCTIONALITY) SHALL BE USED
ON ALL MANHOLES.

COVER SHOWN ON ACC. NO. 49051 SHALL BE USED WHEN
WATERTIGHT LID IS SPECIFIED ON PLANS.

COVER SHOWN ON ACC. NO. 61980 SHALL BE USED ON PRIVATE
SANITARY SEWERS.

CASTING SHALL BE SECURED TO MANHOLE CONE SECTION WITH
3/4" DIAMETER STAINLESS STEEL ANCHOR BOLTS OR CINCH
ANCHORS. BOLTS OR ANCHORS SHALL BE LONG ENOUGH TO
EXTEND THROUGH GRADE RINGS AND AT LEAST 2" INTO
MANHOLE CONE SECTION.

NOTE: NEENAH MAKES AN APPROVED
EQUAL TO THIS STANDARD. OTHERS WILL
ONLY BE APPROVED IF THE EXACT SAME
FUNCTIONALITY AS EONLOCK® IS PROVIDED.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD CASTINGS
FOR MANHOLE

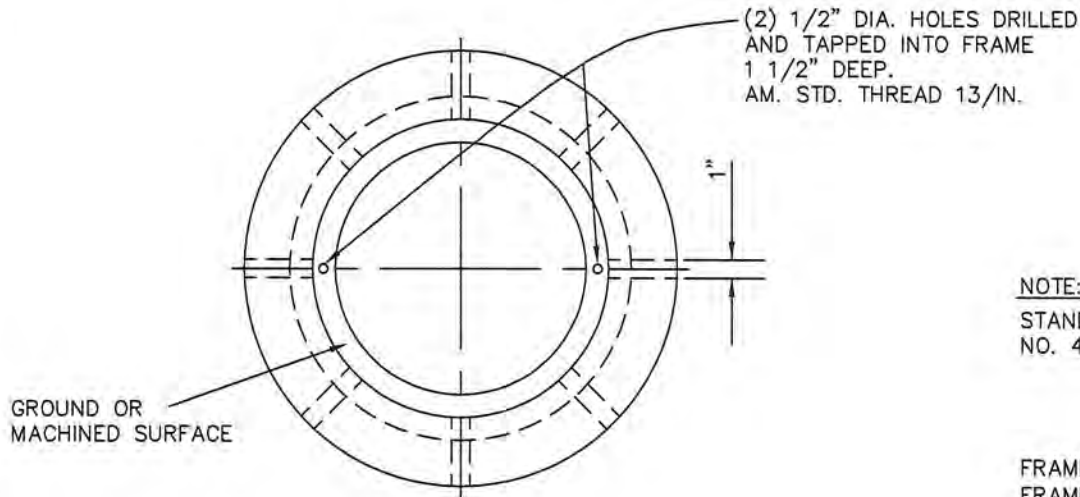
NO SCALE

DATE: AUG. 2011

APPROVED: *Ralph Schuster*
SEWERS CHIEF ENGINEER

M.C.

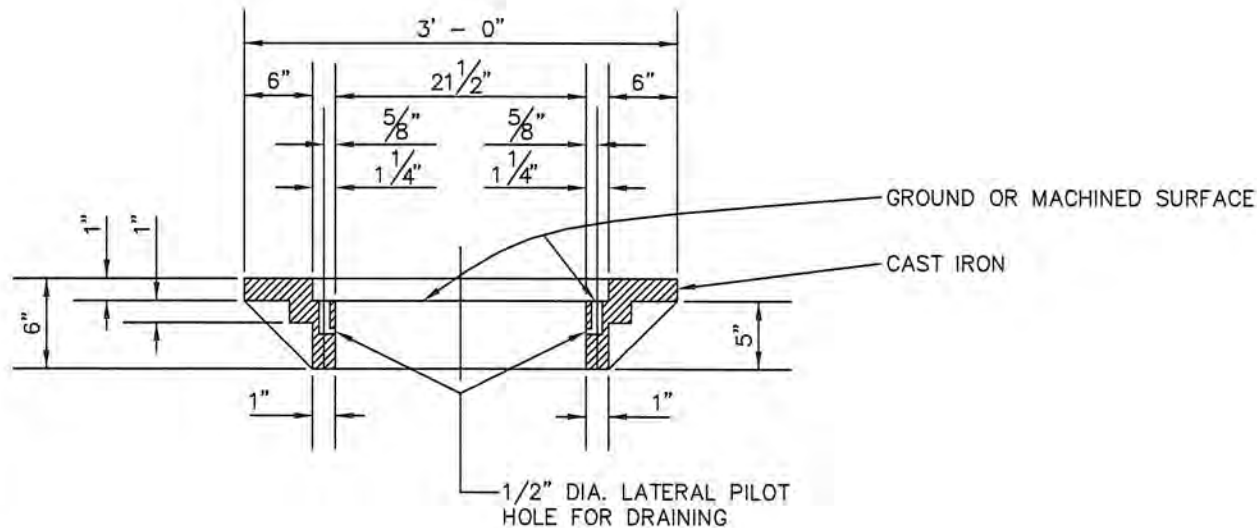
ACC. NO. 49005



NOTE:

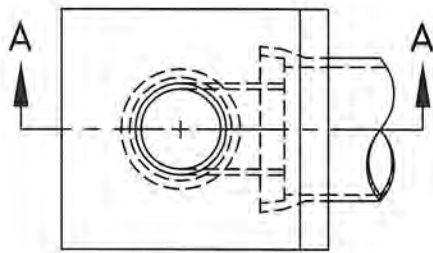
STANDARD MANHOLE COVER AS SHOWN ON ACC. NO. 49005 SHALL BE SUPPLIED WITH THIS FRAME.

FRAME MATERIAL: CAST GRAY IRON ASTM A48, CLASS 35B
FRAME FINISH: NO PAINT



THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD CASTING
MANHOLE FRAME
TYPE "A"

NO SCALE DATE: DEC. 2010
APPROVED: *Ralph C. Johnston*
SEWERS CHIEF ENGINEER

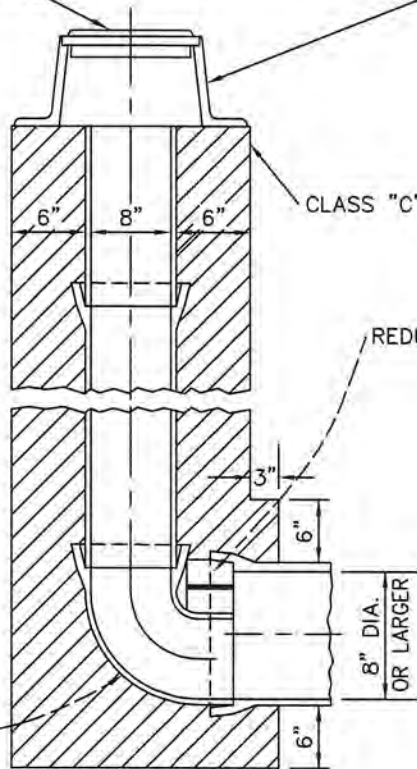


PLAN

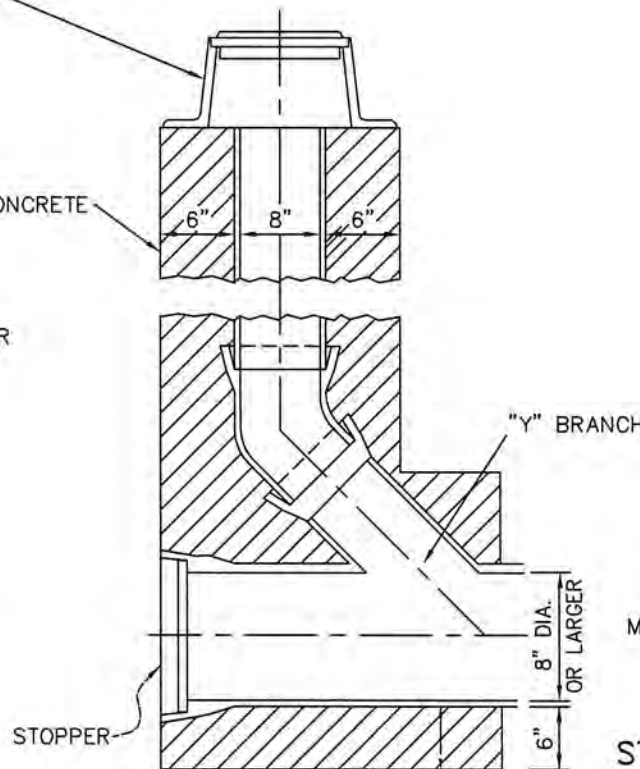
(WITH CASTING REMOVED)

LID SHALL BE LABELED
MSDGC WITH 3/4" LABELS

LAMP HOLE FRAME AND COVER
CASTING No.
EAST JORDAN 1578
NEENAH R 1976
OR SATISFACTORY EQUIVALENT



SECTION A-A



**ALTERNATE
SECTION A-A
(WHEN SPECIFIED)**

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI

STANDARD LAMP HOLE

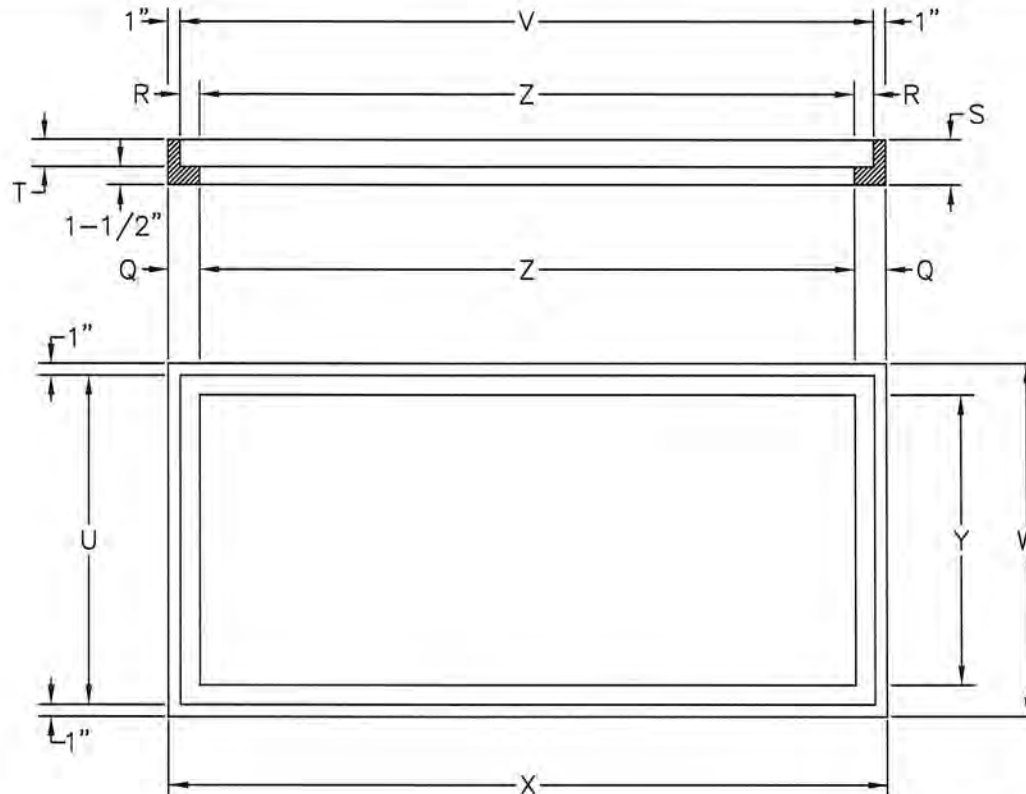
NO SCALE

DATE: JUNE, 2009

APPROVED: *Thomas H. Schwiers*
SEWERS CHIEF ENGINEER

B.W.

ACC. NO. 49009



NOTE: FOR MEASUREMENTS, MATERIALS, FINISH, AND INSPECTION, REFER TO PURCHASING SPEC. NO. 11-34, (LATEST EDITION).

NO.	Z	Y	X	W	V	U	T	S	R	Q	COMPUTED WEIGHT IN POUNDS
1	5'-0"	2'-0"	5'-5-1/4"	2'-5-1/4"	5'-3-1/4"	2'-3-1/4"	2-1/4"	3-3/4"	1-5/8"	2-5/8"	290 ±
2	4'-6"	1'-10-1/2"	4'-11-1/4"	2'-3-3/4"	4'-9-1/4"	2'-1-3/4"	2-1/4"	3-3/4"	1-5/8"	2-5/8"	267 ±
3	4'-0"	1'-9"	4'-5"	2'-2"	4'-3"	2'-0"	2"	3-1/2"	1-1/2"	2-1/2"	225 ±
4	3'-6"	1'-7-1/2"	3'-11"	2'-0-1/2"	3'-9"	1'-10-1/2"	2"	3-1/2"	1-1/2"	2-1/2"	202 ±
5	3'-0"	1'-6"	3'-4-3/4"	1'-10-3/4"	3'-2-3/4"	1'-8-3/4"	1-3/4"	3-1/4"	1-3/8"	2-3/8"	165 ±
6	2'-6"	1'-4-1/2"	2'-10-3/4"	1'-9-1/4"	2'-8-3/4"	1'-7-1/4"	1-3/4"	3-1/4"	1-3/8"	2-3/8"	144 ±
7	2'-0"	1'-3"	2'-4-1/2"	1'-7-1/2"	2'-2-1/2"	1'-5-1/2"	1-1/2"	3"	1-1/4"	2-1/4"	112 ±
8	1'-6"	1'-1-1/2"	1'-10-1/2"	1'-6"	1'-8-1/2"	1'-4"	1-1/2"	3"	1-1/4"	2-1/4"	93 ±
9	1'-0"	1'-0"	1'-4-1/2"	1'-4-1/2"	1'-2-1/2"	1'-2-1/2"	1-1/2"	3"	1-1/4"	2-1/4"	74 ±

T.R.S.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD
INTERCEPTOR INLET FRAME

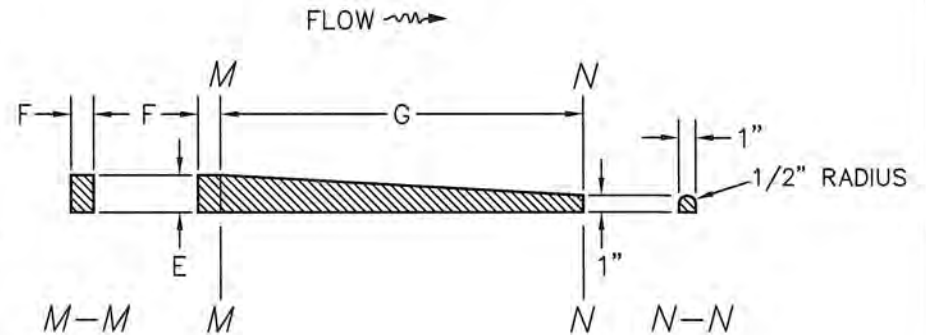
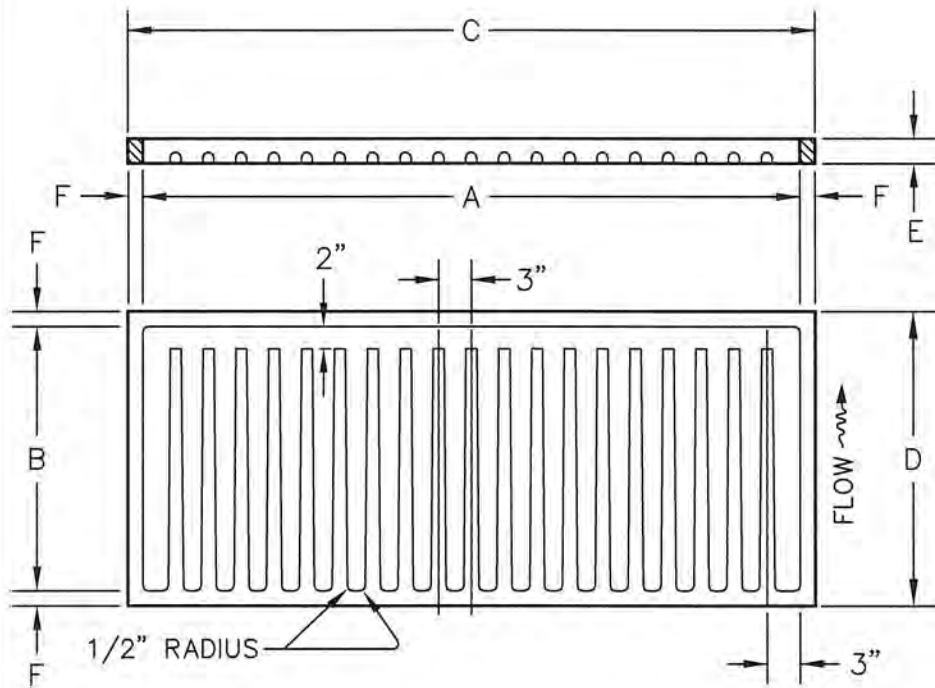
NO SCALE

DATE: AUG., 2006

APPROVED:

SEWERS CHIEF ENGINEER

ACC. NO. 49026



NO.	A	B	C	D	E	F	G	NUMBER OF BARS	COMPUTED WEIGHT IN POUNDS
1	5'-0"	2'-0"	5'-2-3/4"	2'-2-3/4"	2-1/4"	1-3/8"	1'-10"	19	333 ±
2	4'-6"	1'-10-1/2"	4'-8-3/4"	2'-1-1/4"	2-1/4"	1-3/8"	1'-8-1/2"	17	289 ±
3	4'-0"	1'-9"	4'-2-1/2"	1'-11-1/2"	2"	1-1/4"	1'-7"	15	203 ±
4	3'-6"	1'-7-1/2"	3'-8-1/2"	1'-10"	2"	1-1/4"	1'-5-1/2"	13	171 ±
5	3'-0"	1'-6"	3'-2-1/4"	1'-8-1/4"	1-3/4"	1-1/8"	1'-4"	11	113 ±
6	2'-6"	1'-4-1/2"	2'-8-1/4"	1'-6-3/4"	1-3/4"	1-1/8"	1'-2-1/2"	9	91 ±
7	2'-0"	1'-3"	2'-2"	1'-5"	1-1/2"	1"	1'-1"	7	55 ±
8	1'-6"	1'-1-1/2"	1'-8"	1'-3-1/2"	1-1/2"	1"	11-1/2"	5	41 ±
9	1'-0"	1'-0"	1'-2"	1'-2"	1-1/2"	1"	10"	3	28 ±

NOTE: FOR MEASUREMENTS, MATERIALS, FINISH, AND INSPECTION, REFER TO PURCHASING SPEC. NO. 11-34, (LATEST EDITION).

GRATINGS MAY REQUIRE SPECIAL ORDER FROM MANUFACTURER/FOUNDRY

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**STANDARD INTERCEPTOR
INLET GRATING**

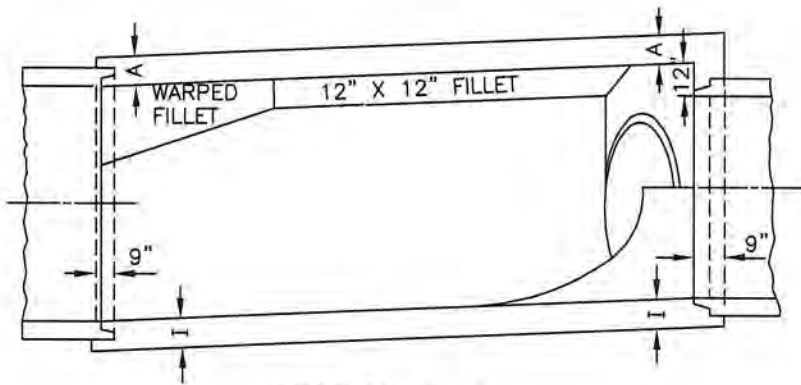
NO SCALE

DATE: JUNE, 2009

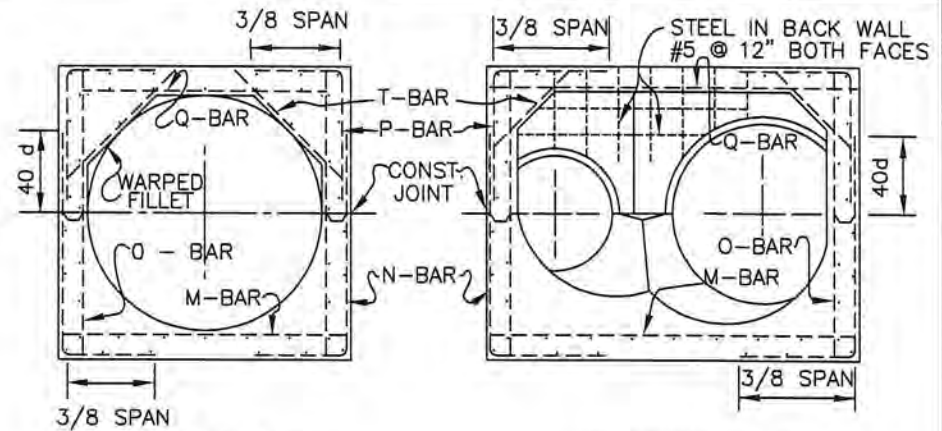
APPROVED: *Thomas H. Schwies*
SEWERS CHIEF ENGINEER

T.R.S.

ACC. NO. 49027

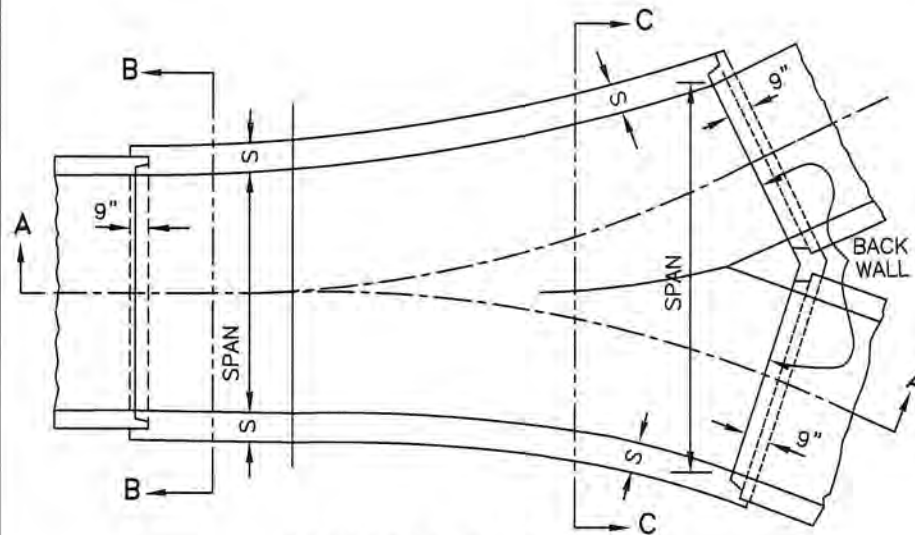


SECTION A-A



SECTION B-B

SECTION C-C



SECTIONAL PLAN

NOTE:

TOP AND BOTTOM SLABS AND SIDE WALLS VARY IN THICKNESS FROM A MINIMUM AT SHORT SPAN TO MAXIMUM AT LONG SPAN WITH DIMENSIONS AS SHOWN IN THE TABLE.

SIZE AND SPACING OF REINFORCING STEEL AS INDICATED IN THE TABLE SHALL BE SELECTED FOR THE RESPECTIVE INCREMENTS OF SPAN, AS DETERMINED FROM THE CONTRACT DRAWINGS OF THE CHAMBER.

STEEL TO HAVE A MINIMUM COVER OF 2 INCHES EXCEPT IN BOTTOM SLAB, WHICH IS TO HAVE A COVER OF 3 INCHES IN EACH FACE.

THIS STANDARD TYPIFIES THE STRUCTURAL DIMENSIONS AND REINFORCING DETAILS FOR A CONCRETE JUNCTION CHAMBER.

THE CHARACTERISTICS OF THE INVERT SHALL BE THE SAME AS INDICATED ON THE CONTRACT DRAWING FOR THE JUNCTION CHAMBER.

CONCRETE SHALL BE CLASS "C"

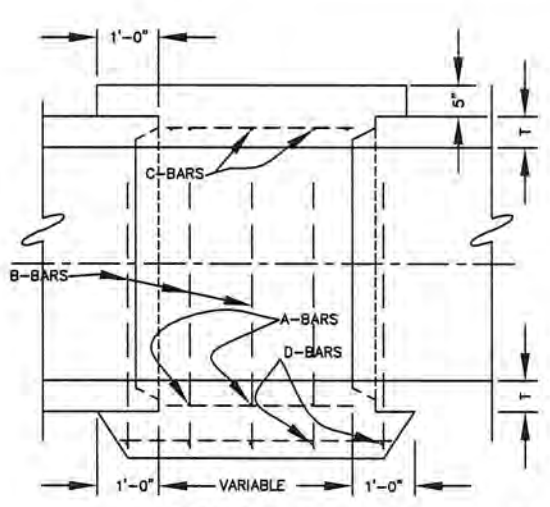
SPAN	CONC. DIMENSIONS			REINFORCING BARS & SPACING					
	A	I	S	M	N	O	P	Q	T
4.0'to 7.0'	10"	12"	10"	#7@10"	#6@10"	#5@20"	#6@10"	#7@10"	#5@20"
7.0'to 10.0'	12"	14"	10"	#7@8"	#6@8"	#5@16"	#6@8"	#7@8"	#5@16"
10.0'to 13.0'	15"	18"	12"	#7@6"	#6@6"	#5@12"	#6@6"	#7@6"	#5@12"
13.0'to 16.0'	18"	21"	15"	#8@6"	#6@6"	#5@12"	#6@6"	#8@6"	#5@12"
				LONG BARS #5 ± @ 15" ± ALL SECTIONS					

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**STRUCTURAL DIMENSIONS AND
STEEL DETAILS FOR REINFORCED
CONCRETE JUNCTION CHAMBERS**

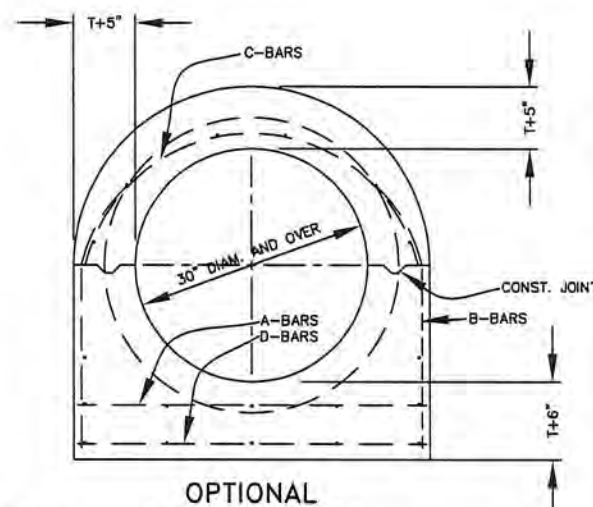
NO SCALE DATE: AUG., 2006

APPROVED: 
SEWERS CHIEF ENGINEER

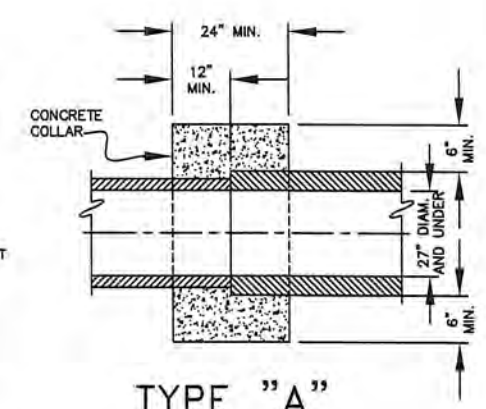
ACC. NO. 49029



SECTION A-A

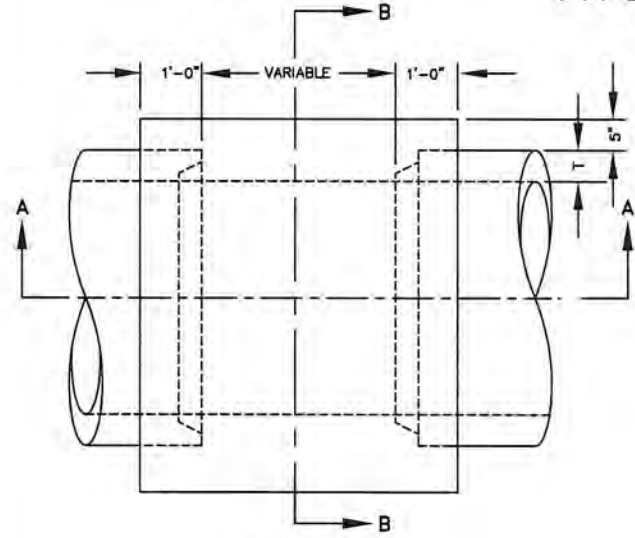


OPTIONAL SECTION B-B

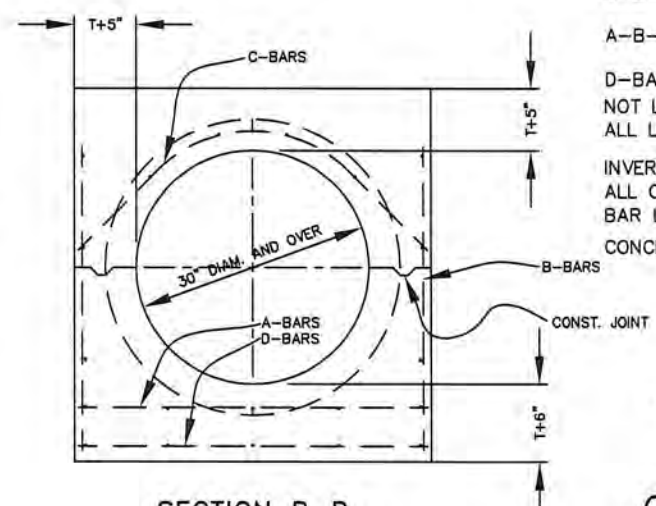


TYPE "A"

TYPE "B"



PLAN



SECTION B-B

NOTE:
 A-B-C AND D-BARS @ 12" O.C.
 #5 BARS FOR 30" TO 60" SEWERS.
 A-B-C { #6 BARS FOR 66" TO 78" SEWERS.
 #7 BARS FOR 84" TO 108" SEWERS.
 D-BARS #5 BARS FOR 30" TO 108" SEWERS.
 NOT LESS THAN 3 TRANSVERSE BARS IN ANY GAP.
 ALL LONGITUDINAL STEEL - #5 BARS @ 18" O.C.
 INVERT STEEL - 3" CL.
 ALL OTHER STEEL - 2" CL.
 BAR LAP - 30 TIMES THE BAR DIAMETER.
 CONCRETE SHALL BE CLASS "C".

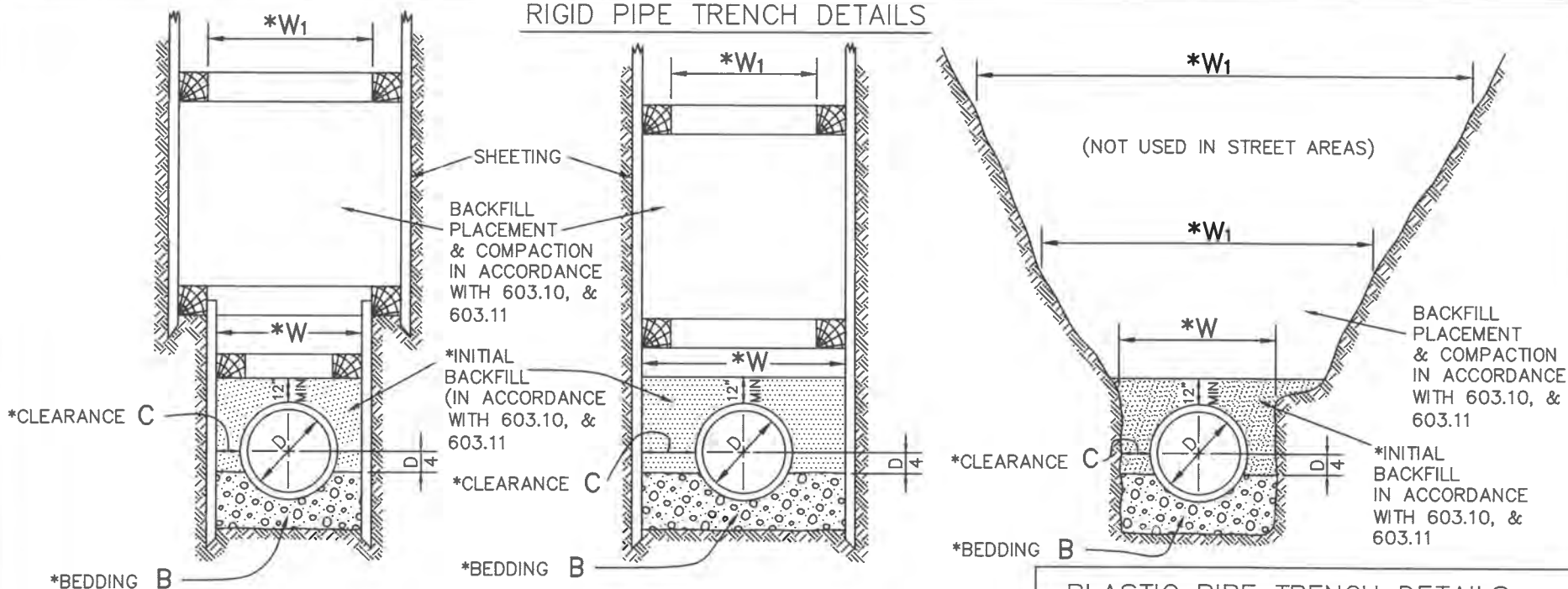
THE
 METROPOLITAN SEWER DISTRICT
 OF
 GREATER CINCINNATI
 STANDARD
 CONCRETE COLLARS
 ON CONDUITS

NO SCALE
 APPROVED: _____ DATE: AUG., 2006
 SEWERS CHIEF ENGINEER

C.J.K.

ACC. NO. 49031

RIGID PIPE TRENCH DETAILS



NOTE: ALL TRENCHES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS (LATEST EDITION).

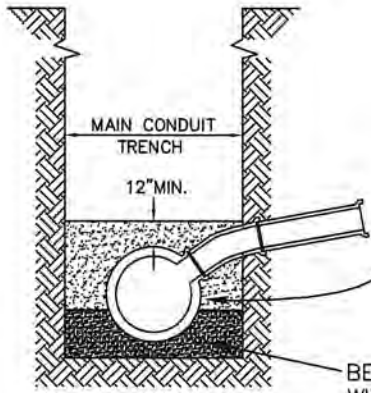
- W** SHALL NOT EXCEED 39 INCHES FOR 8 TO 21 INCH DIAMETER CONDUITS, OR THE GREATEST OUTSIDE DIAMETER PLUS 4 TIMES THE SHELL THICKNESS FOR CONDUITS 24 INCH DIAMETER AND OVER.
- C** SHALL BE NOT LESS THAN 6 INCHES AT THE POINT OF GREATEST OUTSIDE DIAMETER ON CONDUITS UP TO AND INCLUDING 60 INCH DIAMETER. SHALL BE NOT LESS THAN ONE SHELL THICKNESS AT THE POINT OF GREATEST OUTSIDE DIAMETER ON 66 INCH DIAMETER AND OVER.
- W₁** MAY BE EQUAL TO **W**, OR CAN BE MODIFIED AS GOVERNED BY SURFACE OR SUB-SURFACE CONDITIONS.
- B** MATERIAL AND DEPTH OF BEDDING UNDER CONDUIT (SEE ODOT 703.01, TABLE 1 FOR SIZES):
 - 6 INCHES OF SIZE NO. 57 CLEAN WASHED GRAVEL FOR CONDUIT 6 TO 60 INCHES IN DIAMETER.
 - 8 INCHES OF SIZE NO. 2 GRAVEL FOR CONDUIT LARGER THAN 60 INCHES IN DIAMETER.

PLASTIC PIPE TRENCH DETAILS

- * PLASTIC PIPE SHALL BE INSTALLED IN FULL COMPLIANCE WITH ASTM D-2321, LATEST EDITION.
- CLASS I AND CLASS II BEDDING AND INITIAL BACKFILL SHALL BE USED AS FOLLOWS:
 - CLASS I MATERIAL (CRUSHED/ANGULAR NO. 57) SHALL BE USED WHEN THE DEPTH OF COVER ON THE CONDUIT IS BETWEEN 14 - 35 FEET.
 - CLASS II MATERIAL SHALL BE USED WHEN THE DEPTH OF COVER ON THE CONDUIT IS 14 FEET OR LESS.

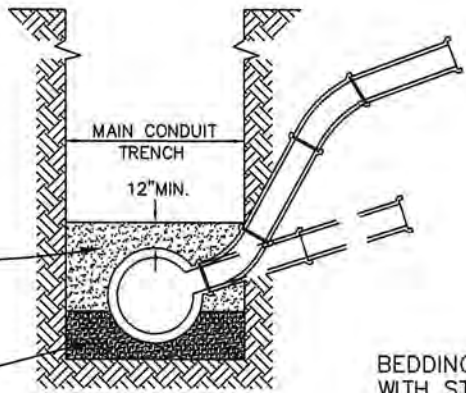
THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**CONTROL DIMENSIONS FOR
TYPICAL TRENCHES
FOR CONDUITS**

NO SCALE DATE: JUNE 2019
APPROVED: *Ryan Welsh*
SEWERS CHIEF ENGINEER



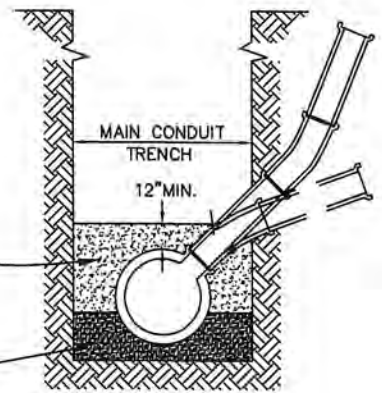
BACKFILL IN ACCORDANCE WITH 603.10

BEDDING IN ACCORDANCE WITH STANDARD DRAWING ACC. NO. 49032



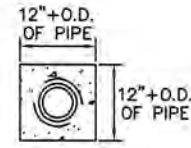
BACKFILL IN ACCORDANCE WITH 603.10

BEDDING IN ACCORDANCE WITH STANDARD DRAWING ACC. NO. 49032

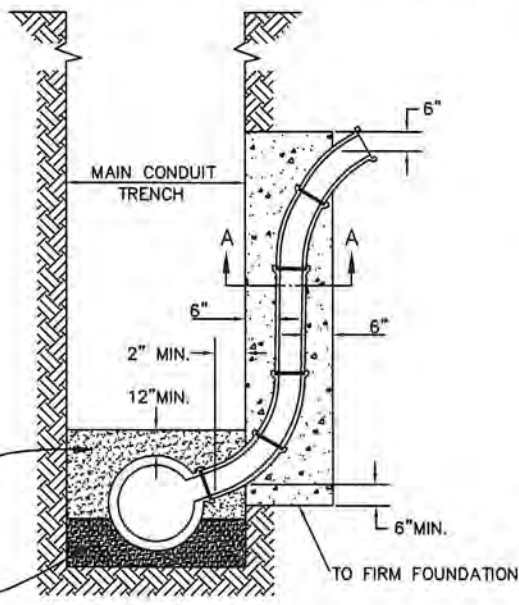


BACKFILL IN ACCORDANCE WITH 603.10

BEDDING IN ACCORDANCE WITH STANDARD DRAWING ACC. NO. 49032



SECTION A-A



BACKFILL IN ACCORDANCE WITH 603.10

BEDDING IN ACCORDANCE WITH STANDARD DRAWING ACC. NO. 49032

NOTE:
 STACKS SHALL BE BUILT OF CONCRETE LAID UP IN 1:2 PORTLAND CEMENT MORTAR, OR ALTERNATIVE CONSTRUCTION OF 6" OF CLASS "E" CONCRETE.

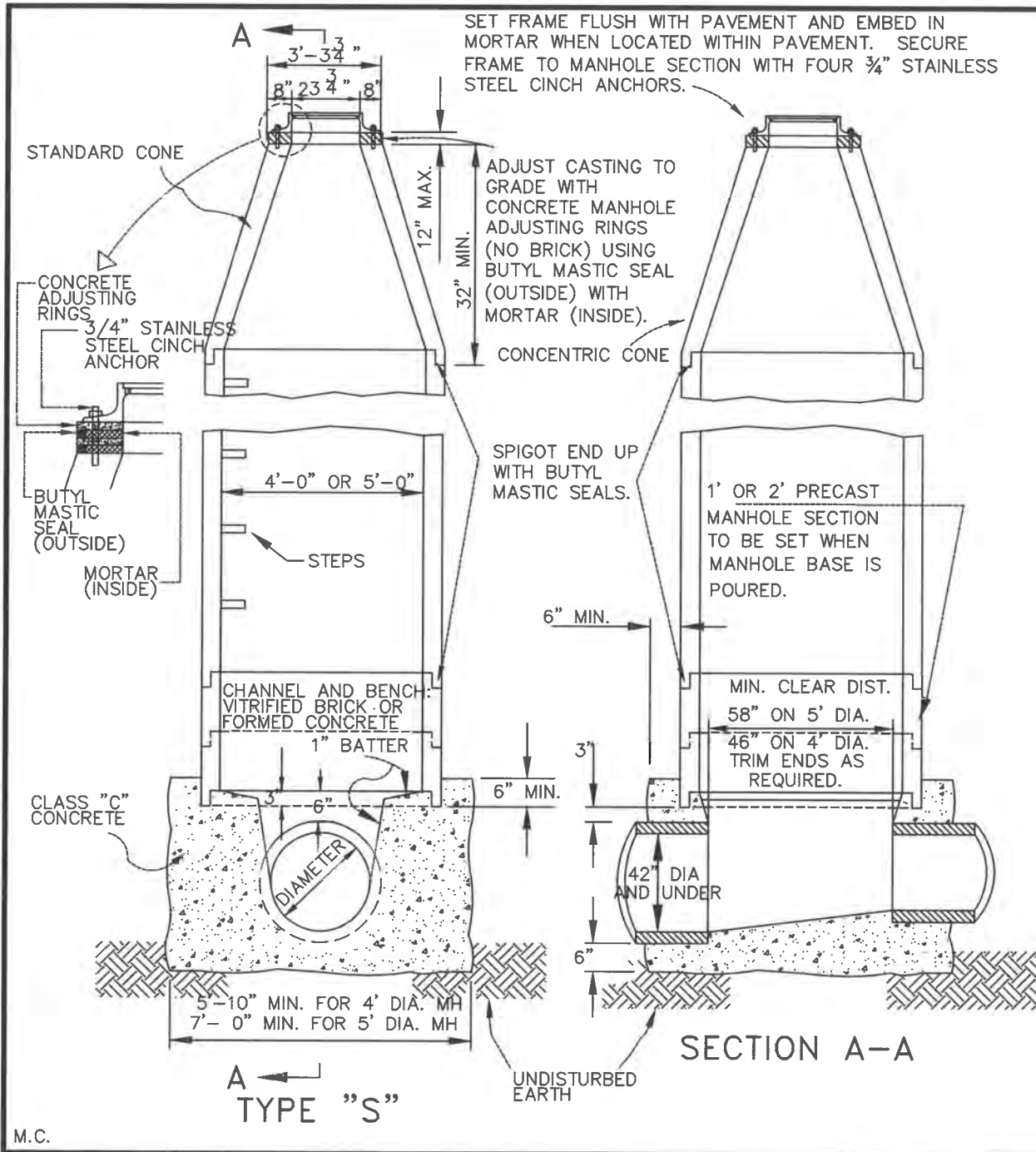
ALL BENDS SHALL BE 30°, OR 22 1/2° FOR PVC PIPE, AS NOTED.

SEE ACC. NO. 49060 FOR INSTALLATION OF BUILDING SEWER LATERAL.

THE
 METROPOLITAN SEWER DISTRICT
 OF
 GREATER CINCINNATI
 TYPICAL
 BUILDING SEWERS AND STACKS

NO SCALE DATE: JUNE, 2009

APPROVED: *Thomas H. Schwiess*
 SEWERS CHIEF ENGINEER



SET FRAME FLUSH WITH PAVEMENT AND EMBED IN MORTAR WHEN LOCATED WITHIN PAVEMENT. SECURE FRAME TO MANHOLE SECTION WITH FOUR 3/4" STAINLESS STEEL CINCH ANCHORS.

NOTES:

MINIMUM 6" LEG OF CONCRETE, MEASURED AT INSIDE FACE OF MANHOLE, SHALL BE PROVIDED BETWEEN ALL OPENINGS AND JOINTS. DEVIATIONS MUST BE APPROVED BY MSDGC.

5' DIAMETER MANHOLE SHALL BE CONSTRUCTED OF 60" PRECAST MANHOLE SECTIONS. A 5' TO 4' REDUCER MAY BE USED ABOVE THE BASE SECTION.

3' ECCENTRIC CONE MAY BE USED ONLY WHERE PERMISSION IS GRANTED BY THE CITY.

PRECAST CONCRETE BARRELS AND CONES SHALL MEET THE REQUIREMENTS OF 706.13 OF THE SPECIFICATIONS.

JOINTS ON MANHOLE SECTIONS SHALL BE MADE WITH A RUBBER GASKET MEETING THE REQUIREMENTS OF ASTM C-443, EXCEPT THAT ONLY "O" RING AND PROFILE GASKETS ARE ACCEPTABLE.

LIFT HOLES IN MANHOLES TO BE SEALED WITH HYDRAULIC CEMENT.

MANHOLE FRAME AND COVER CASTINGS SHALL BE IN ACCORDANCE WITH STD. ACC. NO. 49005

THE STANDARD PRECAST MANHOLE BASE, ACC. NO. 49056, MAY BE USED AS AN ALTERNATE TO THIS STANDARD WHERE APPLICABLE.

USE MANHOLE ACC. NO. 49049 FOR CONDUITS 24" TO 42" IN DIAMETER WHEN NOT LOCATED WITHIN PAVED AREAS.

STEPS CONSTRUCTED OF RUBBER COATED CAST IRON, STAINLESS STEEL, OR FIBER REINFORCED PLASTIC SHALL BE PROVIDED ON ALL MANHOLES.

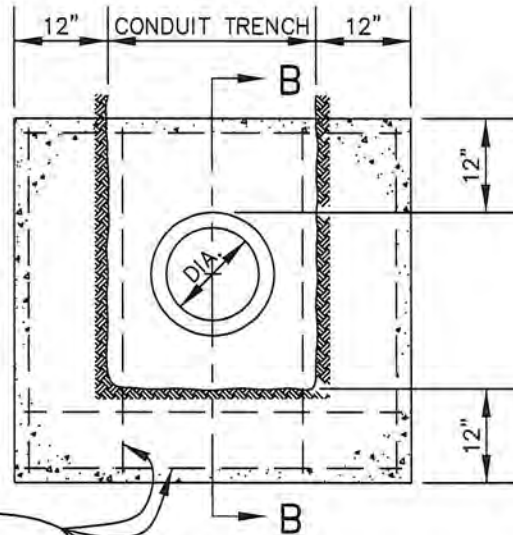
A MIN. 12" WIDTH EXTERIOR SEALANT WRAP, SUCH AS "WRAPIDSEAL" OR APPROVED EQUAL, SHALL BE PROVIDED AROUND JOINTS AND CASTING IN HIGH WATER TABLES, WHEN SPECIFIED ON PLANS.

THE METROPOLITAN SEWER DISTRICT
OF GREATER CINCINNATI
**STANDARD MANHOLE
ON SANITARY CONDUITS
42" AND UNDER**

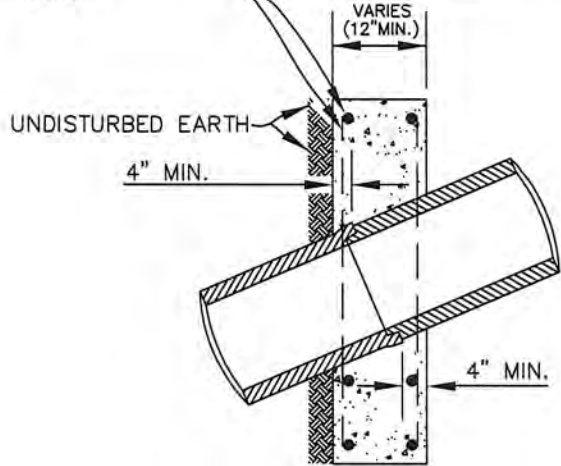
NO SCALE DATE: JAN. 2018

APPROVED: *Ryan Weld*
SEWERS CHIEF ENGINEER

ACC. NO. 49037



ALL BARS SHALL BE #4
WITH MIN. 2" COVER.

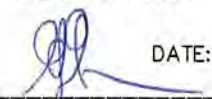


SECTION B-B

NOTE:
CONCRETE SHALL BE CLASS "C"

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD
KEY BLOCK

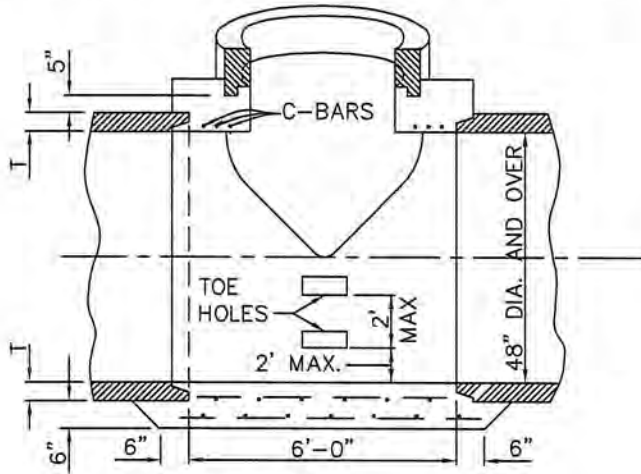
NO SCALE
APPROVED:

DATE: AUG., 2006

SEWERS CHIEF ENGINEER

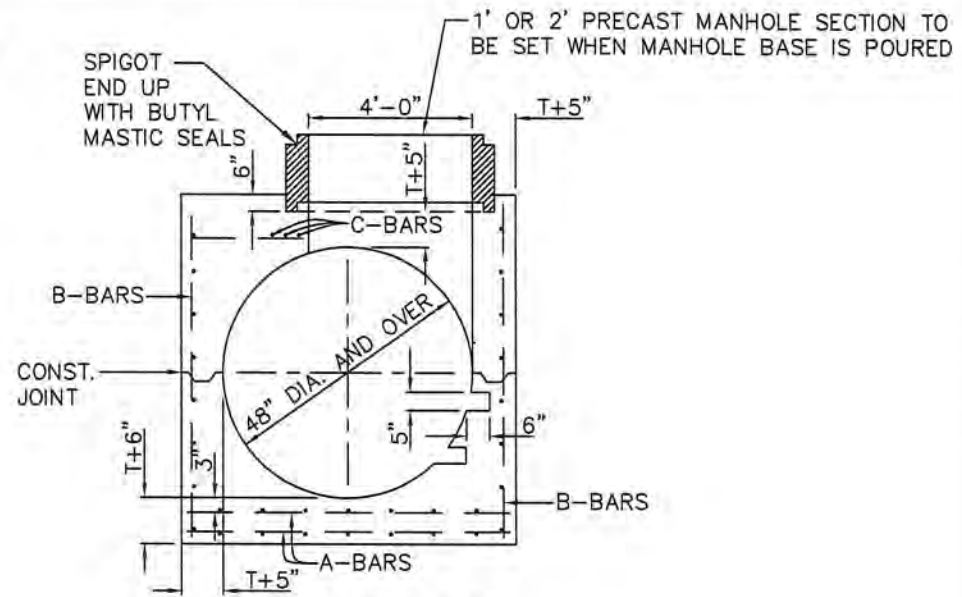
S.N.

ACC. NO. 49039

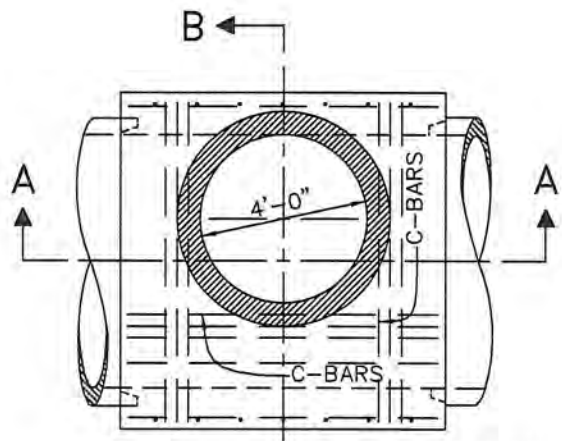
USE SAME BARREL AND CONCENTRIC CONE AS SHOWN ON ACC. NO. 49037 WHEN LOCATED IN PAVED AREAS. WHEN LOCATED OUTSIDE OF PAVED AREAS, PROVIDE FLATTOP SLAB PER ACC. NO. 49048.



SECTION A-A



SECTION B-B



REINFORCING SHOWN IN TOP SLAB

PLAN

NOTES:

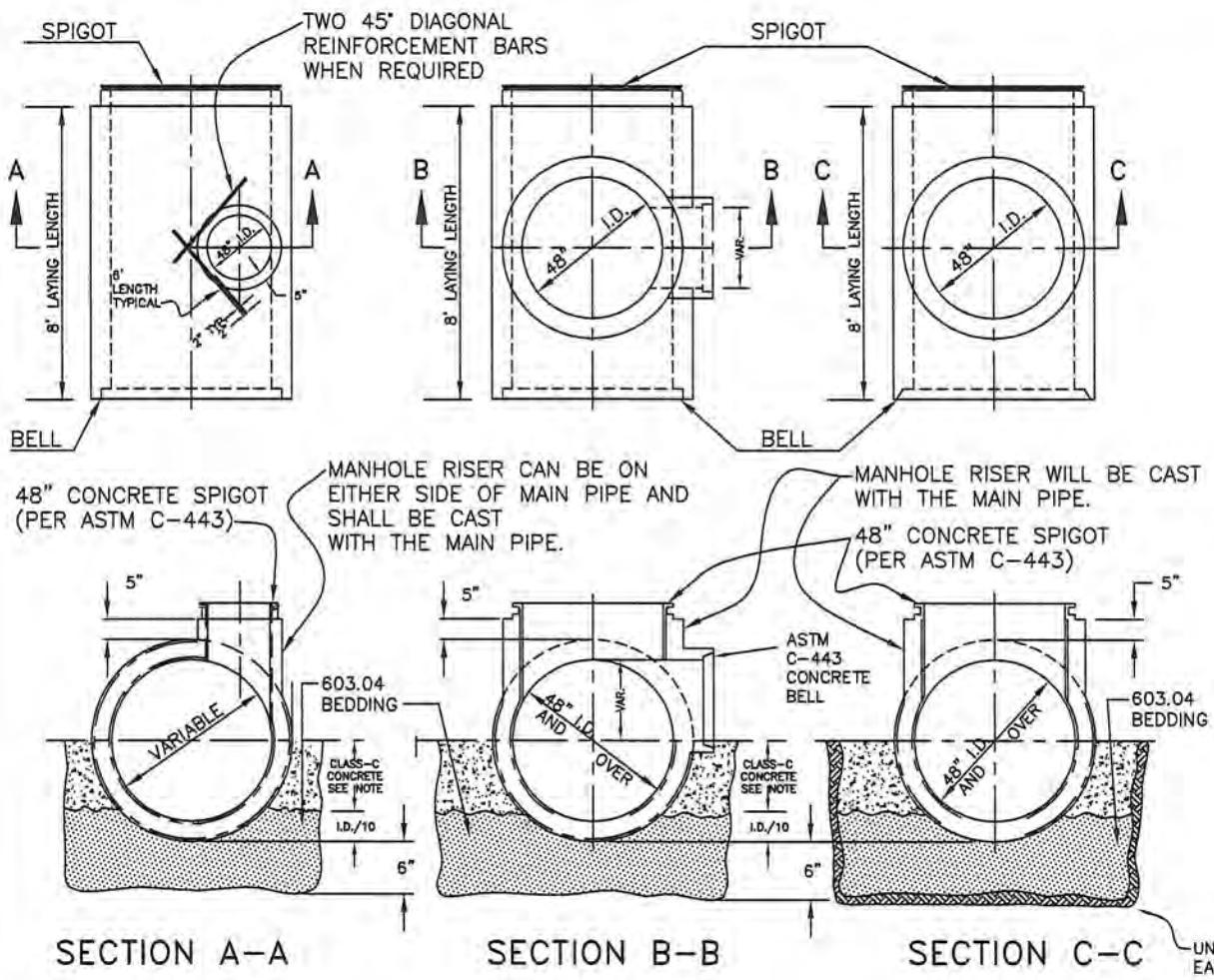
MANHOLE BASE IS SHOWN FOR SEWERS WITH NO HORIZONTAL DEFLECTION. BASE WILL NEED TO BE ENLARGED AND DESIGNED FOR SEWERS WITH HORIZONTAL DEFLECTIONS. 5' DIAMETER BARREL SHALL BE PROVIDED ON CONDUITS 60" AND LARGER. SHOP DRAWINGS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER SHALL BE PROVIDED TO MSD.

- ALL CONCRETE SHALL BE CLASS "C".
- ALL STEEL SHALL HAVE 2" COVER EXCEPT WHERE NOTED.
- LONGITUDINAL STEEL - NO. 5 BARS @ 18" O.C.
- A AND B BARS - 12" O.C. AS SHOWN.
- C BARS - 3" O.C. AS SHOWN.

- A, B AND C BARS - NO. 5 BARS ON 48" TO 60" SEW.
- NO. 6 BARS ON 66" TO 78" SEW.
- NO. 7 BARS ON 84" TO 108" SEW.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**STANDARD MANHOLE
ON SAN. CONDUITS
48" AND OVER**

NO SCALE DATE: DEC. 2010
APPROVED: *Ralph J. Hunt*
SEWERS CHIEF ENGINEER



SECTION A-A
**PRECAST
 MANHOLE TEE
 WITH OFFSET
 MANHOLE RISER**

SECTION B-B
**PRECAST
 MANHOLE TEE
 WITH
 INCOMING LINE**

SECTION C-C
**PRECAST
 MANHOLE TEE
 WITHOUT
 INCOMING LINE**

NOTE: PRECAST MANHOLE TEE SHALL BE INSTALLED ON A 6" MINIMUM GRAVEL BASE (#57 CLEAN WASHED TYPE 1) AS SHOWN. CLASS "C" CONCRETE SHALL BE INSTALLED AROUND MANHOLE BASE UP TO THE SPRING LINE AS SHOWN WHEN DEPTH OF MANHOLE EXCEEDS 20 FEET.

NOTES:

USE SAME BARREL AND CONCENTRIC CONE AS SHOWN ON ACC. NO. 49037 WHEN LOCATED IN PAVED AREAS. WHEN LOCATED OUTSIDE OF PAVED AREAS, PROVIDE BARREL AND FLATTOP SLAB AS SHOWN ON ACC. NO. 49048.

5' DIAMETER BARREL SHALL BE USED ON CONDUITS 60" AND LARGER.

THE PRECAST MANHOLE TEE SHALL MEET THE SAME STRENGTH CLASS AS THE MAINLINE PIPE.

PRECAST MANHOLE TEES MAY BE USED ON CONDUITS 48" AND OVER UNLESS OTHERWISE NOTED ON THE PLANS.

REINFORCEMENT STEEL SHALL BE IN ACCORDANCE WITH ASTM C-478.

ALL CONCRETE SHALL BE CLASS "C".

THE GASKET BETWEEN THE PRECAST MANHOLE BASE RISERS SHALL MEET THE REQUIREMENTS OF ASTM C-443, EXCEPT THAT ONLY "O" RING AND PROFILE GASKETS ARE ACCEPTABLE.

OPENINGS FOR INFLUENT AND EFFLUENT CONDUIT SHALL BE PROVIDED TO MEET THE PROJECT REQUIREMENT.

ALL LIFT HOLES SHALL BE SEALED WITH HYDRAULIC CEMENT.

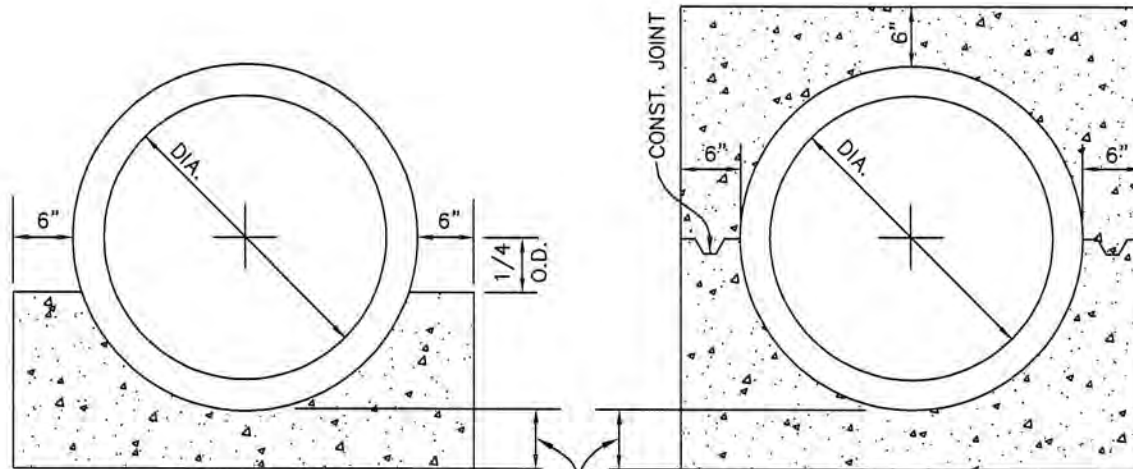
ALL CHARACTERISTICS NOT SHOWN HEREON SHALL BE SIMILAR TO ACC. NO. 49037.

THE
 METROPOLITAN SEWER DISTRICT
 OF
 GREATER CINCINNATI
PRECAST MANHOLE TEE
 ALTERNATE FOR TYPE "T" STANDARD
 MANHOLE ON SANITARY
 CONDUITS 48" AND OVER

NO SCALE DATE: DEC. 2010
 APPROVED: *Ralph Johnston*
 SEWERS CHIEF ENGINEER

M.C.

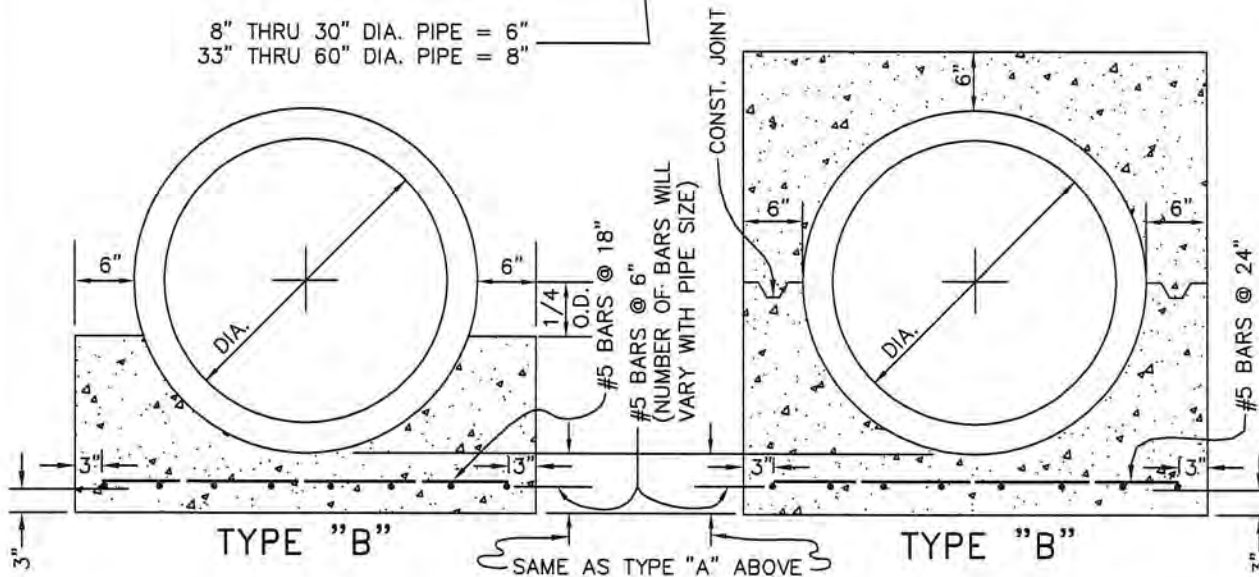
ACC. NO. 49040-A



TYPE "A"

TYPE "A"

8" THRU 30" DIA. PIPE = 6"
 33" THRU 60" DIA. PIPE = 8"



TYPE "B"

TYPE "B"

CRADLE

ENCASEMENT

PIPE SIZE IN.	CRADLE CU. YDS./L.F.	ENCASEMENT CU. YDS./L.F.
8	.0398	.1079
10	.0493	.1266
12	.0619	.1500
15	.0734	.1787
18	.0852	.2085
21	.0922	.2343
24	.1103	.2719
27	.1239	.3058
30	.1381	.3410
33	.1800	.4046
36	.1972	.4443
42	.2335	.5278
48	.2727	.6167
54	.3134	.7111
60	.3570	.8108

QUANTITY TABULATION

THESE QUANTITIES SHALL BE USED TO
 DETERMINE THE PAY QUANTITY FOR 602.

NOTE:

CONCRETE SHALL BE CLASS "C"

THE
 METROPOLITAN SEWER DISTRICT
 OF
 GREATER CINCINNATI
 STANDARD
 CONC. CRADLE AND
 ENCASEMENT

NO SCALE

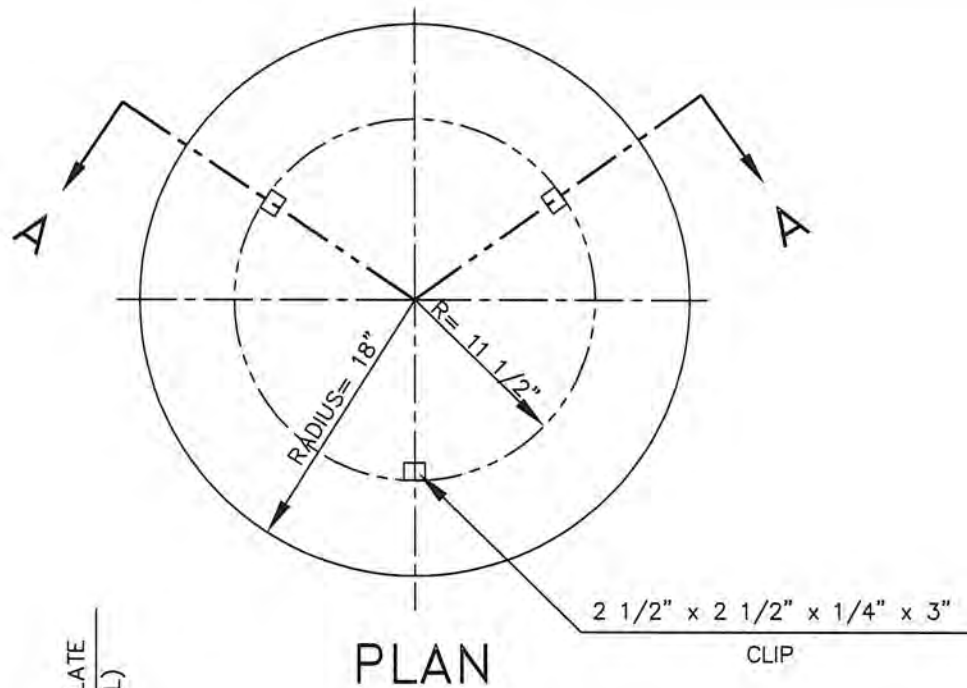
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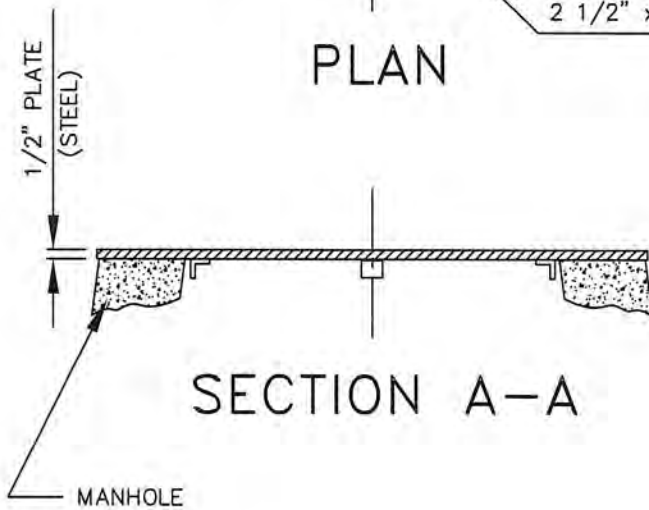
SEWERS CHIEF ENGINEER

J.W.

ACC. NO. 49044



NOTE
CLIPS SHALL BE WELDED TO COVER



THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD TEMPORARY
MANHOLE COVER

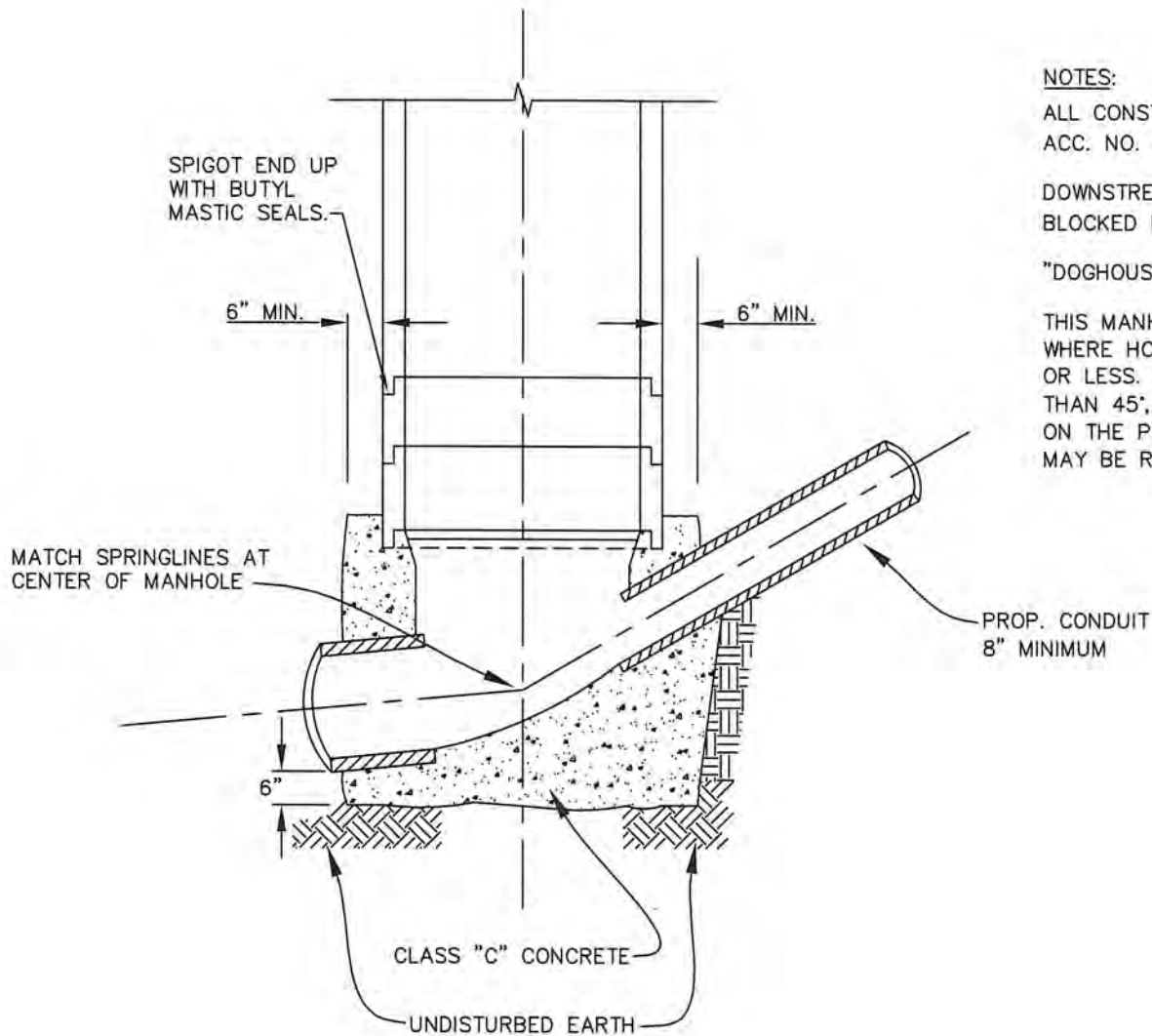
NO SCALE
APPROVED:

[Signature]
SEWERS CHIEF ENGINEER

DATE: AUG., 2006

T.P.

ACC. NO. 49045



NOTES:

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ACC. NO. 49037 FOR A 4' OR 5' DIA. MANHOLE.

DOWNSTREAM SIDE OF MANHOLE SHALL BE KEY BLOCKED INTO UNDISTURBED EARTH.

"DOGHOUSE" MANHOLE CONSTRUCTION METHOD IS ACCEPTABLE.

THIS MANHOLE SHALL BE RESTRICTED TO LOCATIONS WHERE HORIZONTAL DEFLECTION OF MAINLINE IS 45' OR LESS. IF THE DEFLECTION OF MAINLINE IS GREATER THAN 45', A DETAIL OF THE MANHOLE SHALL BE SHOWN ON THE PLANS AND A 6' DIA. OR LARGER MANHOLE BASE MAY BE REQUIRED TO ALLOW A SMOOTH FLOW TRANSITION.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**STANDARD MANHOLE FOR
SANITARY CONDUITS ON
STEEP SLOPES**

NO SCALE

DATE: JUNE, 2009

APPROVED: *Thomas Schweiers*
SEWERS CHIEF ENGINEER

FLOOR BOX FRAME AND LID NEENAH R-7506-E OR ACCEPTED EQUIVALENT, LID SHALL BE LABELED 'STORM' WITH 1" RAISED LETTERING

EXISTING HARD SURFACE

THREADED PLUG; PLASTIC TRENDS PART #D1156 OR EQUAL

FEMALE ADAPTOR; PLASTIC TRENDS PART #D1406 OR EQUAL

SAND OR GRAVEL

6" DIAMETER

PVC

ADD 6-INCH "HAND-TITE" EXPANSION PLUG, R.C. GRAHAM COMPANY OR APPROVED EQUAL, WHEN INSTALLED FOR FUTURE USE (TYPICAL)

HARD SURFACE

6"x6"x6" TWO WAY CLEANOUT PLASTIC TRENDS PART #G1006, MULTI-FITTINGS PART #043708 OR APPROVED EQUAL

EXISTING GROUND

8"-12" DEPTH

THREADED PLUG; PLASTIC TRENDS PART #D1156 OR EQUAL

FEMALE ADAPTOR; PLASTIC TRENDS PART #D1406 OR EQUAL

DUCTILE IRON PIPE SLEEVE, 6" MINIMUM LENGTH, EXTEND 1"-2" ABOVE TOP OF CLEANOUT

SAND OR GRAVEL

6" DIAMETER

PVC

SOFT SURFACE

THE METROPOLITAN SEWER DISTRICT OF GREATER CINCINNATI
STANDARD CLEANOUT ON STORM TAPS

NO SCALE

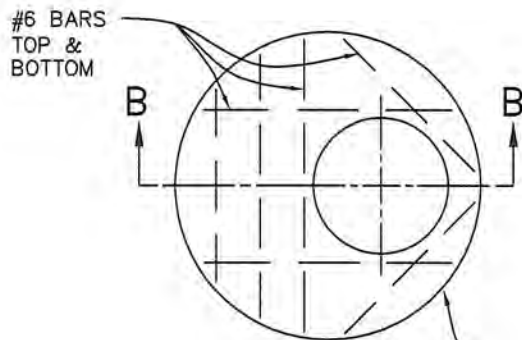
DATE: AUG. 2011

APPROVED:

Ralph Johnston
 SEWERS CHIEF ENGINEER

M.C.

ACC. NO. 49047

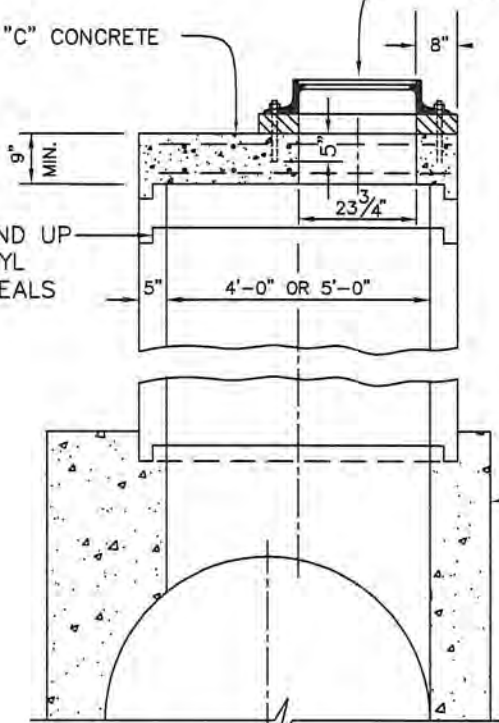


#6 BARS
TOP &
BOTTOM

FLATTOP MANHOLE PER
ACC. NO. 49049 TYPE "B"

CLASS "C" CONCRETE

SPIGOT END UP
WITH BUTYL
MASTIC SEALS



STANDARD TYPE "T" MANHOLE BASE
(ACC. NO. 49040 OR 49040-A)

SECTION A-A

NOTES:

PRECAST CONCRETE BARRELS SHALL BE IN ACCORDANCE WITH ITEM 706.13 OF THE SPECIFICATIONS.

JOINTS ON MANHOLE SECTIONS SHALL BE MADE WITH A RUBBER GASKET MEETING THE REQUIREMENT OF ASTM C-443, EXCEPT THAT ONLY "O" RING AND PROFILE GASKETS ARE ACCEPTABLE.

LIFT HOLES IN MANHOLES TO BE SEALED WITH HYDRAULIC CEMENT.

1' PRECAST MANHOLE SECTION TO BE SET WHEN MANHOLE TOP IS POURED.

ALL CONCRETE SHALL BE CLASS "C".

ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 1 1/2" BOTH FACES.

STEPS CONSTRUCTED OF RUBBER COATED CAST IRON, STAINLESS STEEL, OR FIBER REINFORCED PLASTIC SHALL BE PROVIDED ON ALL MANHOLES.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**MODIFIED
TYPE "T"
MANHOLES**

NO SCALE

DATE: DEC. 2010

APPROVED:

Ralph J. [Signature]
SEWERS CHIEF ENGINEER

M.C.

ACC. NO. 49048

NOTES:

MINIMUM 6" LEG OF CONCRETE, MEASURED AT INSIDE FACE OF MANHOLE, SHALL BE PROVIDED BETWEEN ALL OPENINGS AND JOINTS. DEVIATIONS MUST BE APPROVED BY MSDGC.

*MANHOLE FRAMES SHALL BE SECURELY FASTENED BY (4) 7/8" STAINLESS STEEL ANCHOR BOLTS. DOWEL HOLES SHALL BE IN ACCORDANCE WITH ITEM 510 OF THE SPECIFICATIONS. FRAME AND COVER SHALL BE ACC. NO. 49005.

ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 1 1/2" BOTH FACES.

JOINTS ON MANHOLE SECTIONS SHALL BE MADE WITH A RUBBER GASKET MEETING THE REQUIREMENTS OF ASTM C-443, EXCEPT THAT ONLY "O" RING AND PROFILE GASKETS ARE ACCEPTABLE.

LIFT HOLES IN MANHOLES SHALL BE SEALED WITH HYDRAULIC CEMENT.

1' PRECAST MANHOLE SECTION SHALL BE SET WHEN MANHOLE TOP IS POURED.

ALL OTHER CHARACTERISTICS ARE SIMILAR TO STANDARD MANHOLES.

ALL CONCRETE SHALL BE CLASS "C".

PRECAST CONCRETE BARRELS SHALL BE IN ACCORDANCE WITH ITEM 706.13 OF THE SPECIFICATIONS.

STEPS CONSTRUCTED OF RUBBER COATED CAST IRON, STAINLESS STEEL, OR FIBER REINFORCED PLASTIC SHALL BE PROVIDED ON ALL MANHOLES.

A MIN. 12" WIDTH EXTERIOR SEALANT WRAP, SUCH AS "WRAPIDSEAL" OR APPROVED EQUAL, SHALL BE PROVIDED AROUND JOINTS AND CASTING IN HIGH WATER TABLES, WHEN SPECIFIED ON PLANS.

USE THIS MANHOLE WHEN NOT LOCATED WITHIN PAVED AREAS.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI

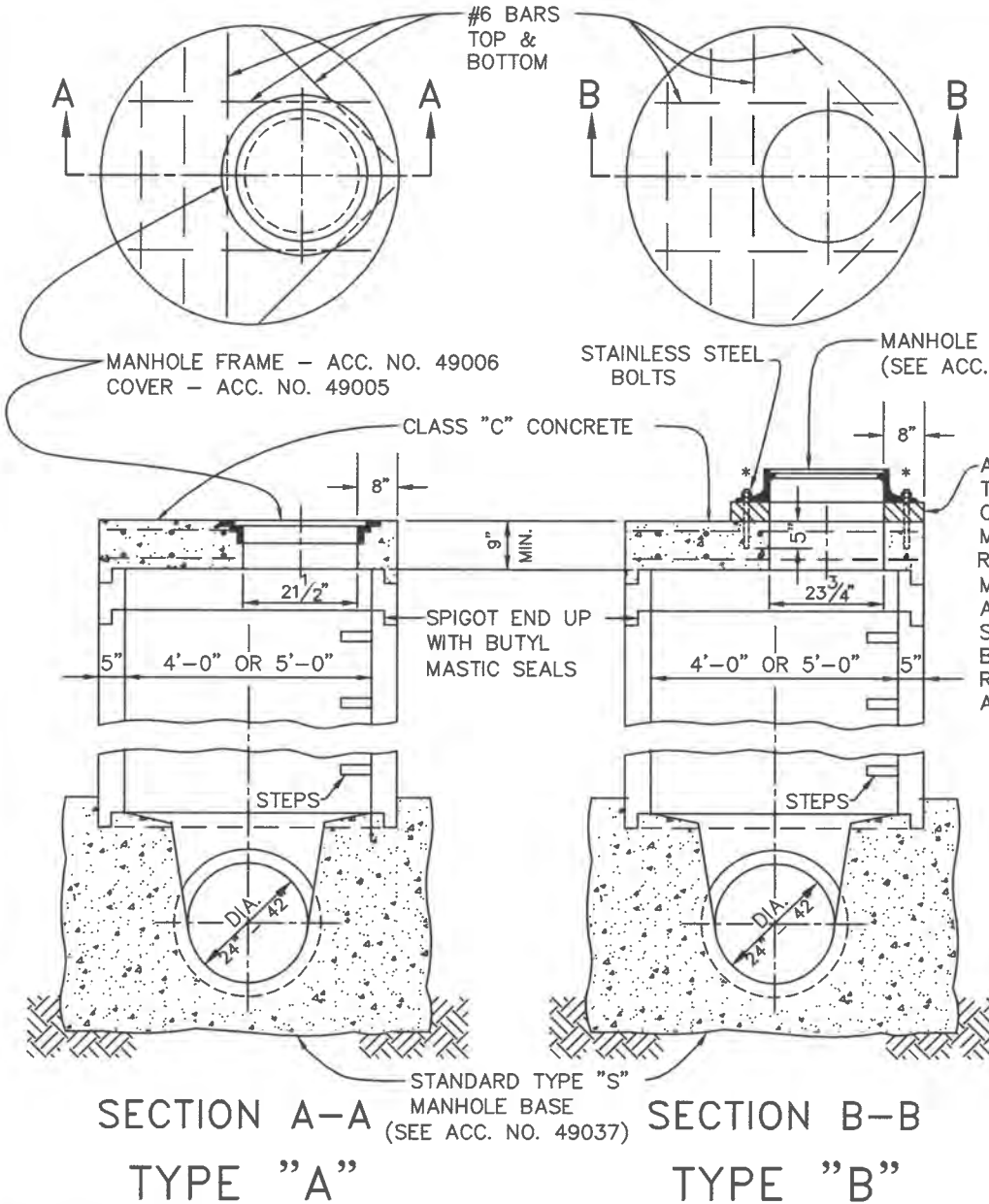
MODIFIED
TYPE "S" MANHOLES
(CONDUITS 24" - 42" DIA)

NO SCALE

DATE: JAN. 2018

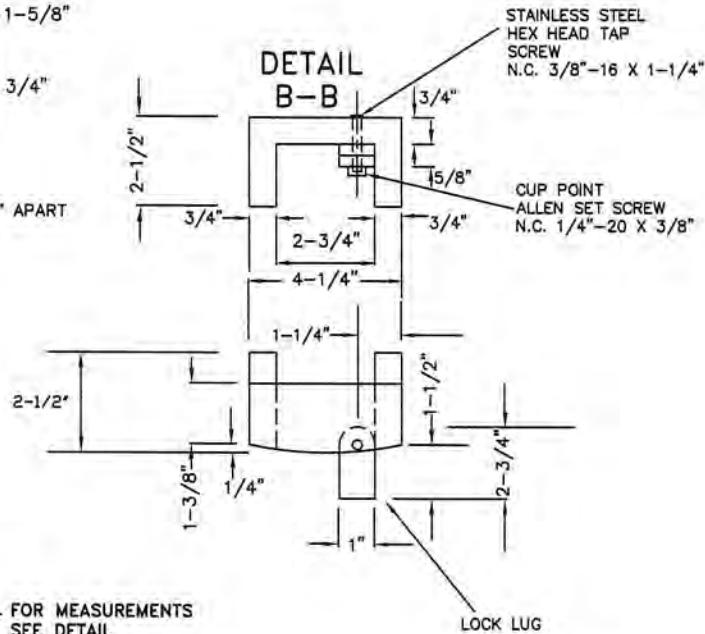
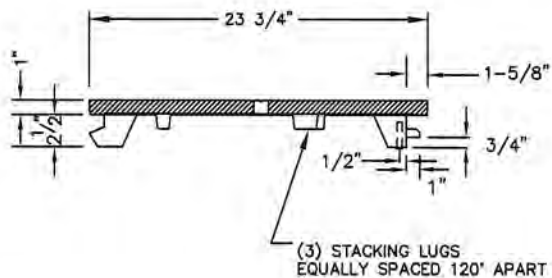
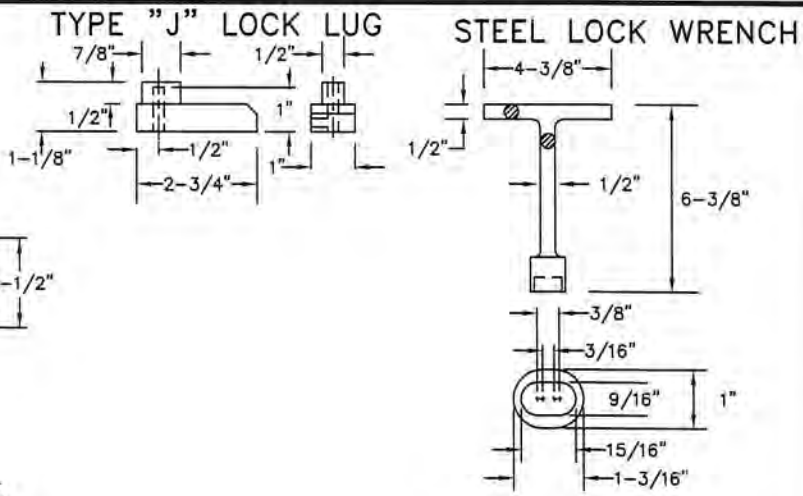
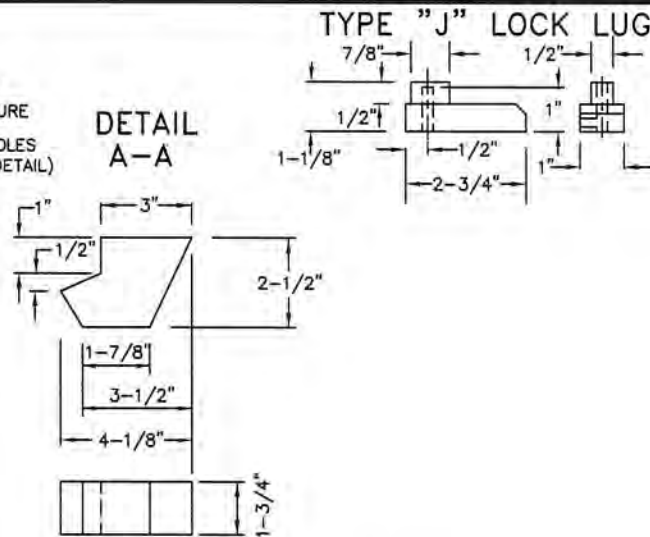
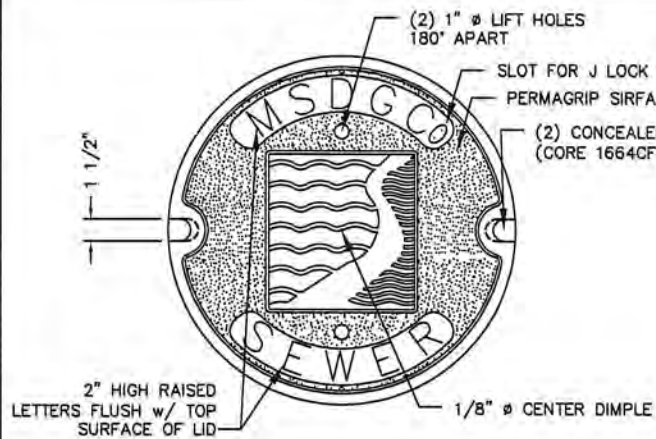
APPROVED:

Ryan Webb
SEWERS CHIEF ENGINEER

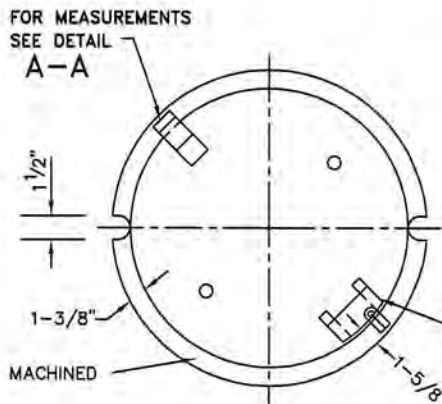


SECTION A-A
TYPE "A"
STANDARD TYPE "S"
MANHOLE BASE
(SEE ACC. NO. 49037)

SECTION B-B
TYPE "B"



NOTE: FOR USE WITH STANDARD
MANHOLE FRAME ACC. NO. 49006
THIS COVER SHALL BE USED ONLY
WHERE SPECIFIED ON THE PLANS



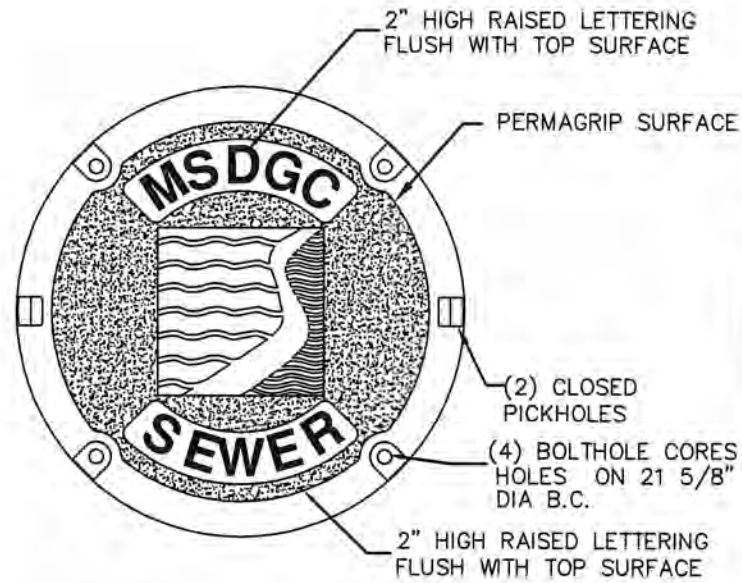
FOR MEASUREMENTS
SEE DETAIL
B-B

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
LOCKING LID
MANHOLE

NO SCALE
APPROVED:

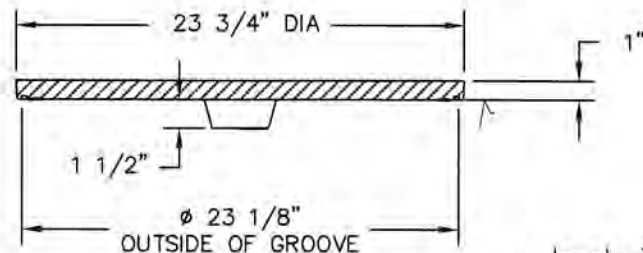
DATE: AUG., 2006
SEWERS CHIEF ENGINEER

ACC. NO. 49050

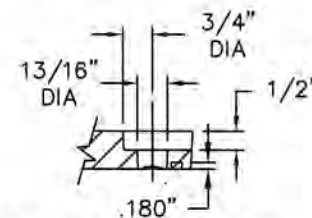


BOTTOM VIEW

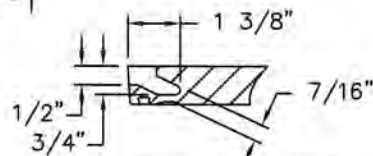
LID SPEC: EAST JORDAN PRODUCT #00166527,
1665 APT COVER
LID MATERIAL: CAST GRAY IRON ASTM A48, CLASS 35B
LID FINISH: NO PAINT



COVER SECTION



BOLT HOLE SECTION



PICKHOLE DETAIL

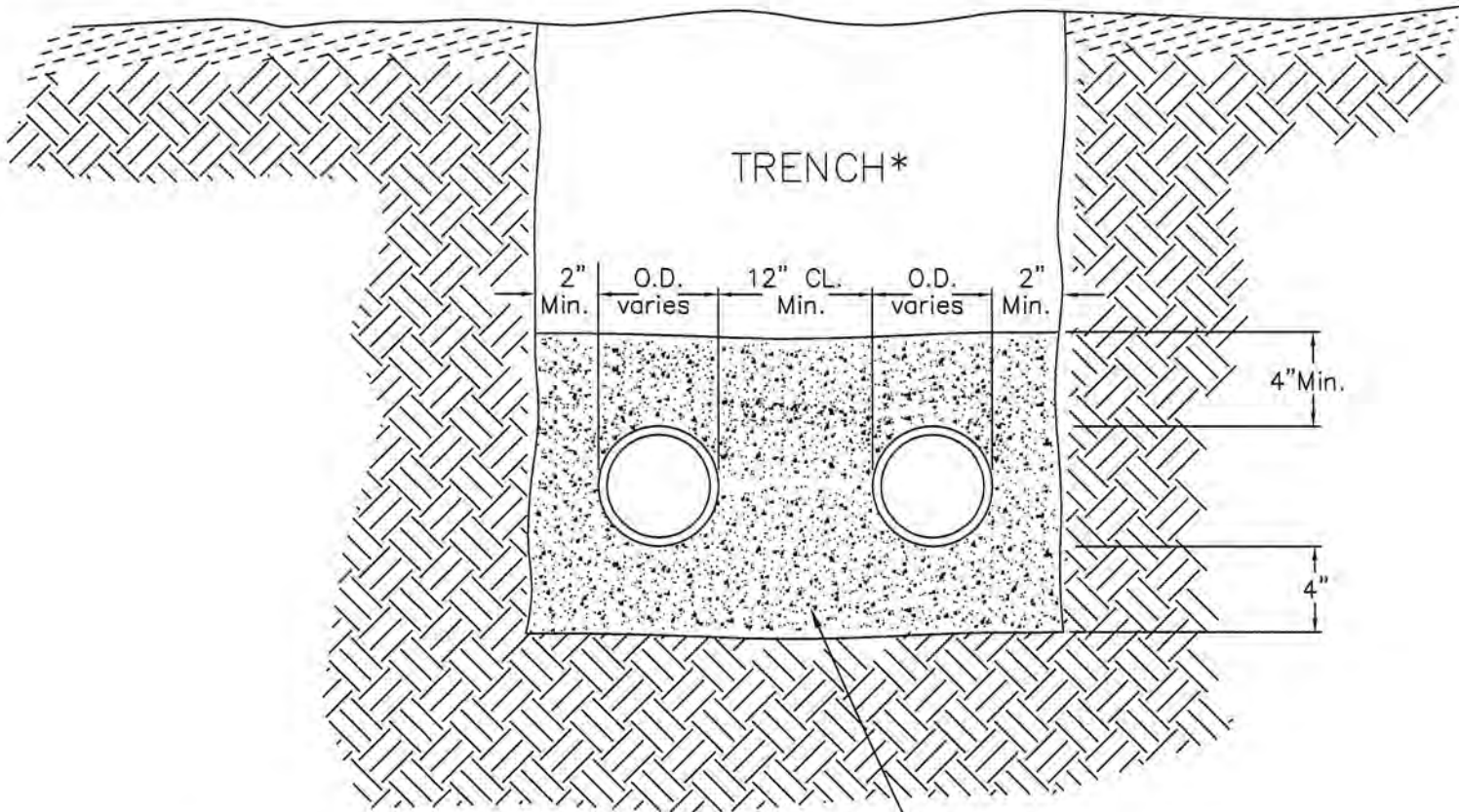
NOTE: THIS COVER SHALL BE USED ONLY WHERE SPECIFIED ON THE PLANS. FOR USE WITH STANDARD MANHOLE FRAMES ACC. NO.'S 49005 & 49006.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI

WATERTIGHT LID

NEOPRENE GASKET SHALL BE PROVIDED IN LID OR FRAME AS NECESSARY TO PROVIDE A WATERTIGHT SEAL.

NO SCALE DATE: AUG. 2011
APPROVED: *Ralph Robinson*
SEWERS CHIEF ENGINEER



* If Ductile Iron Pipe (Type "G") is used within the trench, granular bedding and backfill may be used in place of concrete in accordance with 603.06 and 603.10.

NOTE: MINIMUM REQUIREMENT FOR TWO (2) PIPES IN ONE (1) TRENCH. (TO BE USED ONLY WITH SPECIAL PERMISSION AS AUTHORIZED BY M.S.D.)

Class "C" Concrete
(Dry Mix is Permissible)

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**SPECIAL DETAIL FOR LAYING
TWO BUILDING SEWERS
IN ONE TRENCH**

NO SCALE

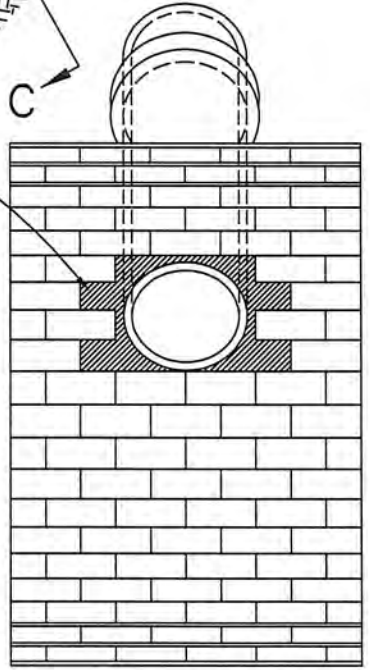
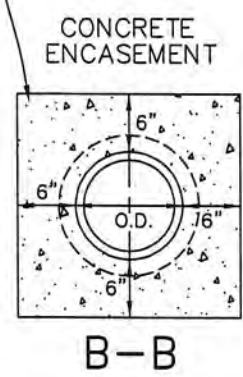
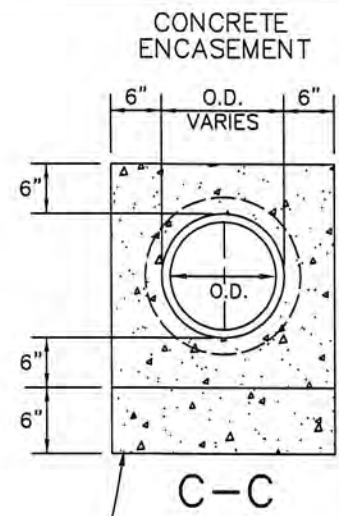
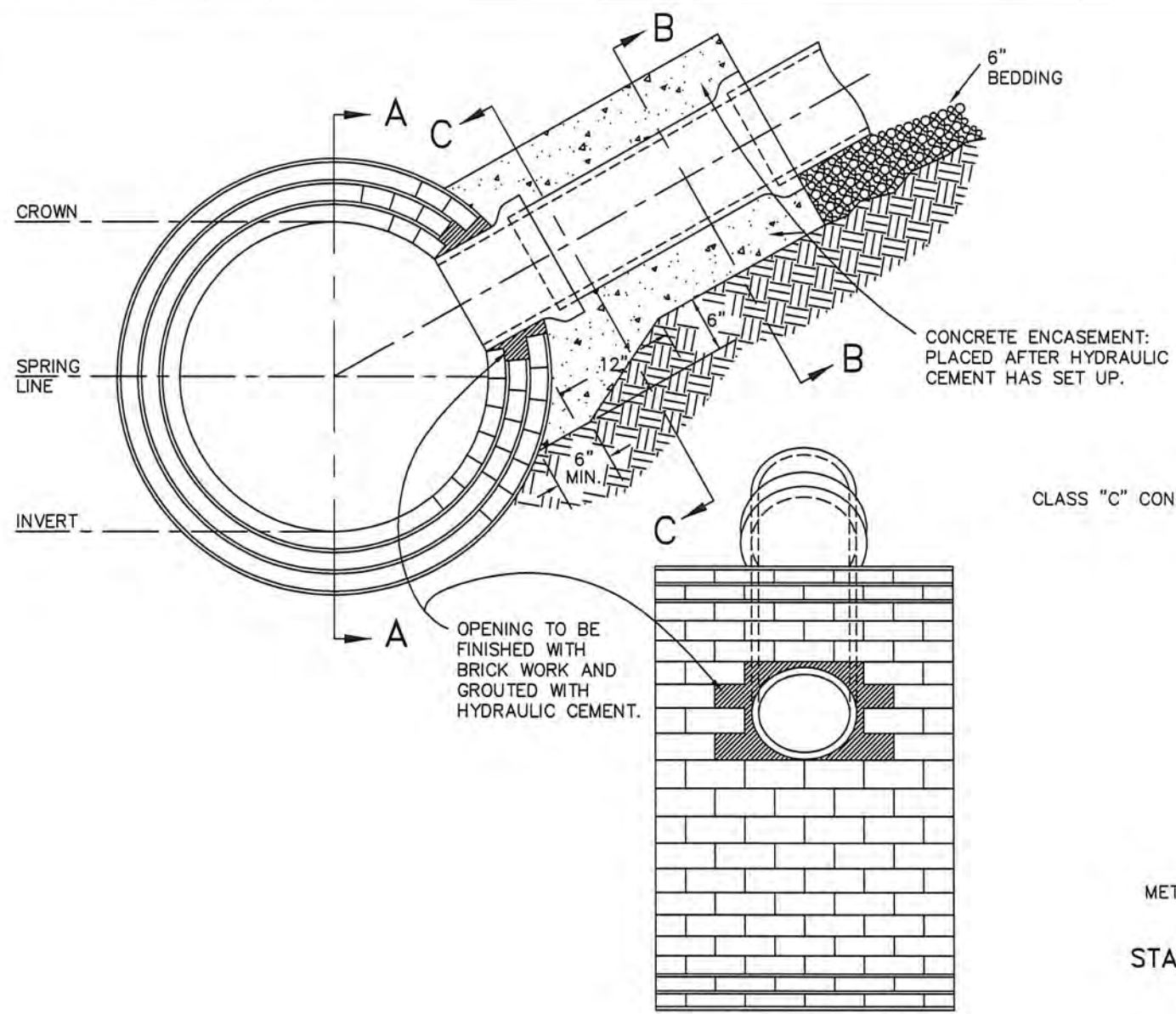
DATE: AUG., 2006

APPROVED:

SEWERS CHIEF ENGINEER

S.N.

ACC. NO. 49052



CLASS "C" CONCRETE

THE
 METROPOLITAN SEWER DISTRICT
 OF
 GREATER CINCINNATI
**STANDARD CONNECTION
 TO EXISTING
 BRICK SEWER**

NO SCALE
 APPROVED:  DATE: AUG., 2006
 SEWERS CHIEF ENGINEER

S.N.

REV. APRIL, 1982
 REV. MAY, 1995

ACC. NO. 49053

GRADE STAKE: SHALL BE SET AT THE MANHOLES AND 25' INTERVALS THEREAFTER, EXCEPT WHERE A LASER BEAM IS USED. FOR LASER BEAM CONSTRUCTION, A GRADE STAKE SHALL BE SET AT THE MANHOLE AND 50' INTERVALS THEREAFTER.

BATTER BOARD: SHALL BE A STRAIGHT WOOD BOARD, A MINIMUM OF 2" X 6", AND SHALL BE CLAMPED LEVEL, WITH THE TOP AT THE PROPER GRADE OFFSET, TO EITHER METAL OR WOOD UPRIGHTS WHICH ARE DRIVEN SECURELY INTO THE GROUND. BATTER BOARDS SHALL BE AT 25' INTERVALS WITH A MINIMUM OF 3 BEING SET UP AT ALL TIMES. BATTER BOARDS SHALL BE SET PERPENDICULAR TO THE CENTER LINE OF THE PIPE AT EACH GRADE STAKE. BATTER BOARDS SHALL SPAN THE TRENCH, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. A GRADE STRING SHALL BE STRETCHED BETWEEN THE 3 BATTER BOARDS, OVER THE CENTER LINE OF THE PIPE, TO CHECK LINE AND GRADE. FOR LASER BEAM CONSTRUCTION, A BATTER BOARD SHALL BE SET EVERY 50' TO CHECK LINE AND GRADE.

GRADE POLE: SHALL BE A STRAIGHT POLE WITH ROUNDED EDGES, APPROXIMATELY 2" X 2", WITH LENGTH DEPENDING ON NEED. THE GRADE POLE SHALL BE EQUIPPED WITH A METAL BRACKET ON THE BOTTOM WITH PROJECTING LENGTH OF 12"±. NAILS SHALL BE PLACED INTO THE GRADE POLE FOR DEPTH OF THE FLOW LINE BELOW THE GRADE STRING AND FOR THE DEPTH OF TRENCH. SPIRIT LEVELS SHALL BE USED ON THE GRADE POLE TO DETERMINE WHEN THE GRADE POLE IS VERTICAL.

NOTE: INSPECTOR'S COPY OF "CUT SHEET" SHALL BE ON PROJECT BEFORE PIPE IS LAID.

FOR TRENCH DETAILS AND BEDDING
SEE ACCESSION NO. 49032

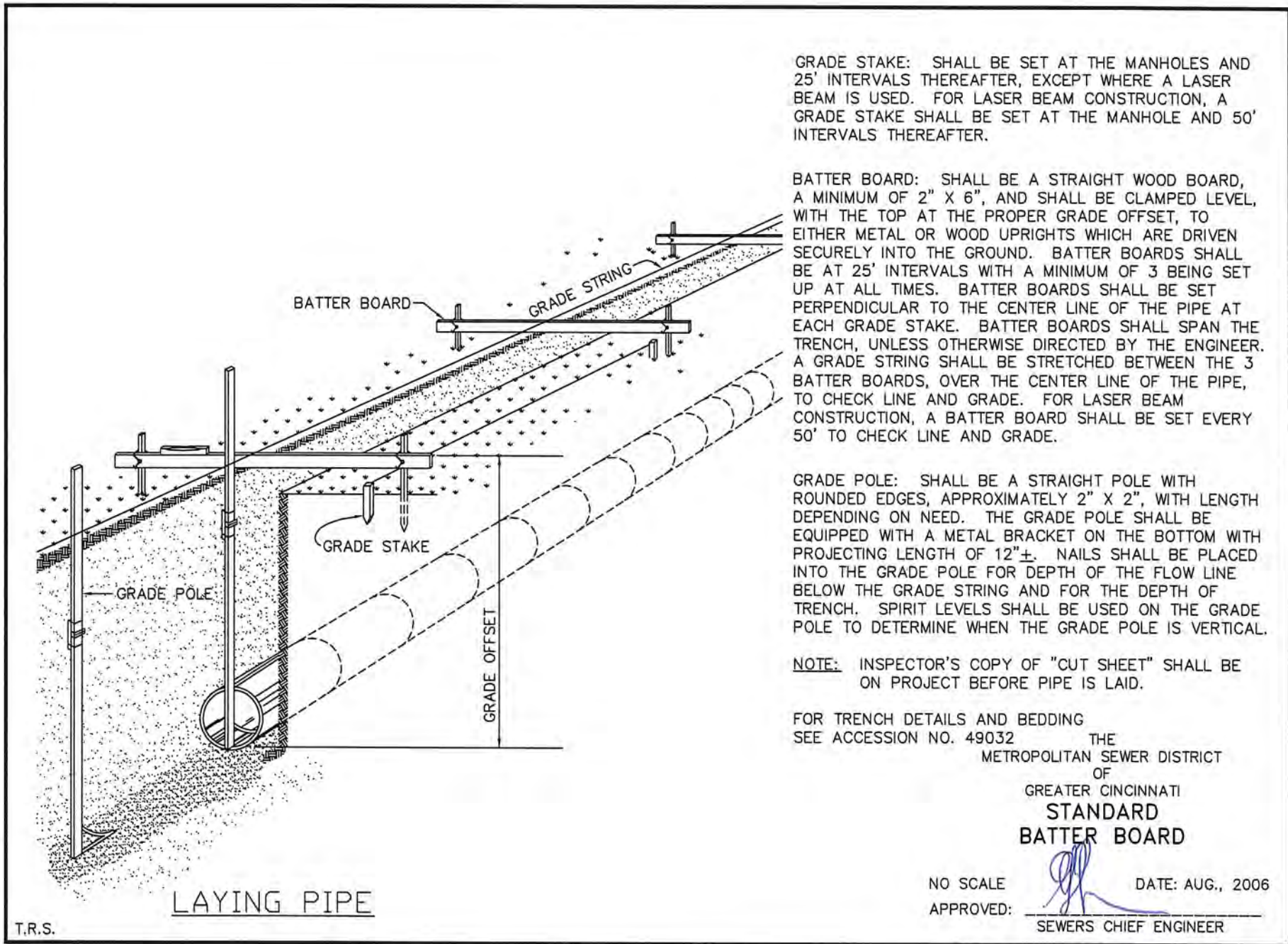
THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**STANDARD
BATTER BOARD**

NO SCALE
APPROVED:

DATE: AUG., 2006

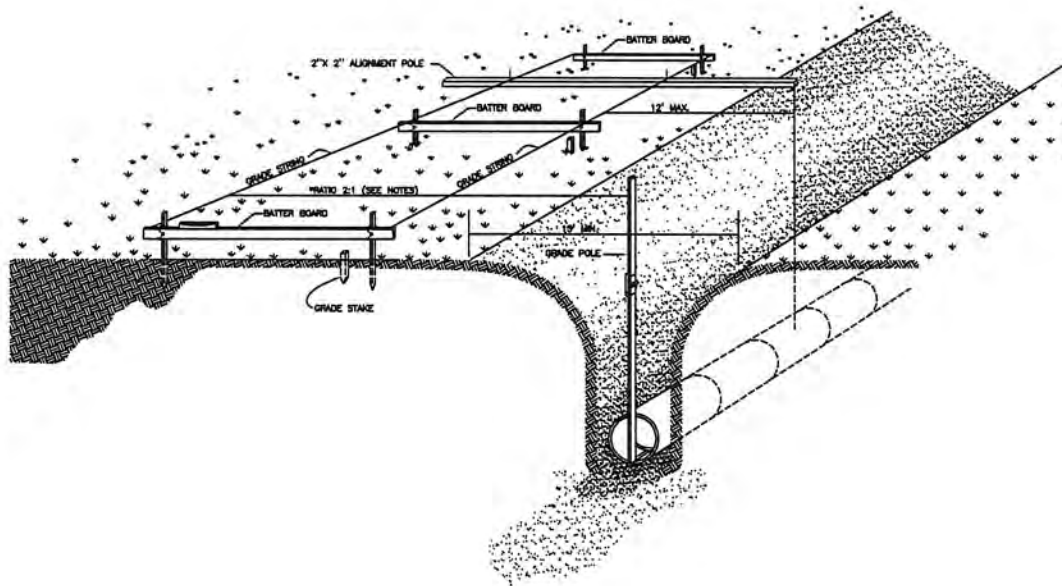

SEWERS CHIEF ENGINEER

ACC. NO. 49054



LAYING PIPE

T.R.S.



DOUBLE STRING METHOD:

MAY BE USED ONLY WHEN OPEN CUT TRENCH TOP EXCEEDS 15 FEET AND WHEN SLOPE OF PIPE EXCEEDS 0.80%.

LASER OR BATTER BOARDS (ACC. NO. 49054) ARE REQUIRED FOR SLOPES LESS THAN 0.80%.

* PROJECTION OF STRINGS SHALL NOT EXCEED RATIO OF TWO TO ONE, i.e., IF DISTANCE FROM CLOSEST STRING TO PIPE IS 10 FEET, THEN DISTANCE BETWEEN STRINGS SHALL NOT BE LESS THAN 5 FEET. MAXIMUM OFFSET TO NEAREST STRING SHALL BE 12 FEET.

GRADE STAKE: SHALL BE SET AT THE MANHOLES AND 25' INTERVALS THEREAFTER, EXCEPT WHERE A LASER BEAM IS USED. FOR LASER BEAM CONSTRUCTION, A GRADE STAKE SHALL BE SET AT MANHOLE AND 50' INTERVALS THEREAFTER.

BATTER BOARD: SHALL BE A STRAIGHT WOOD BOARD, A MINIMUM OF 2"X 4", AND SHALL BE CLAMPED LEVEL, WITH THE TOP AT THE PROPER GRADE OFFSET, TO EITHER METAL OR WOOD UPRIGHTS WHICH ARE DRIVEN SECURELY INTO THE GROUND. BATTER BOARDS SHALL BE AT 25' INTERVALS WITH A MINIMUM OF 3 BEING SET UP AT ALL TIMES. BATTER BOARDS SHALL BE SET PERPENDICULAR TO THE CENTER LINE OF THE PIPE AT EACH GRADE STAKE. GRADE STRINGS SHALL BE STRETCHED BETWEEN THE 3 BATTER BOARDS TO CHECK LINE AND GRADE. FOR LASER BEAM CONSTRUCTION A BATTER BOARD SHALL BE SET EVERY 50' TO CHECK LINE AND GRADE.

GRADE POLE: SHALL BE A STRAIGHT POLE WITH ROUNDED EDGES, APPROXIMATELY 2"X 2", WITH LENGTH DEPENDING ON NEED. THE GRADE POLE SHALL BE EQUIPPED WITH A METAL BRACKET ON THE BOTTOM WITH PROJECTING LENGTH OF 12"±. NAILS SHALL BE PLACED INTO THE GRADE POLE FOR DEPTH OF THE FLOW LINE BELOW THE GRADE STRING AND FOR THE DEPTH OF TRENCH. SPIRIT LEVELS SHALL BE USED ON THE GRADE POLE TO DETERMINE WHEN THE GRADE POLE IS VERTICAL.

A 2"X 2" MARKED POLE, WITH PLUMB BOB SHALL BE USED FOR CENTER LINE MEASUREMENTS (ALIGNMENT).

NOTE: INSPECTOR'S COPY OF "CUT SHEET" SHALL BE ON PROJECT BEFORE PIPE IS LAID.

FOR TRENCH DETAILS AND BEDDING SECTION SEE ACCESSION NO. 49032

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI

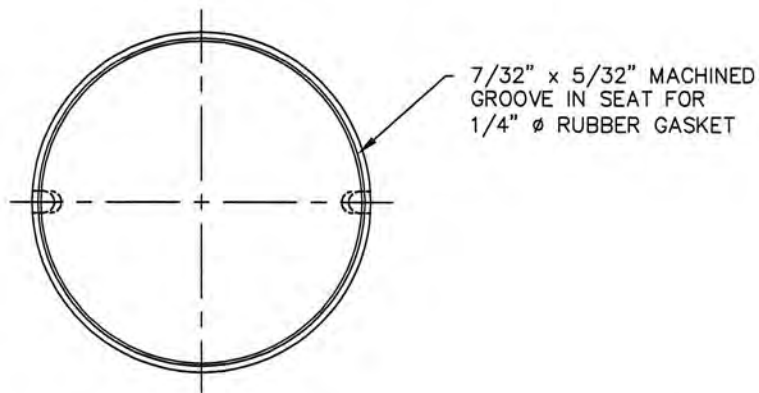
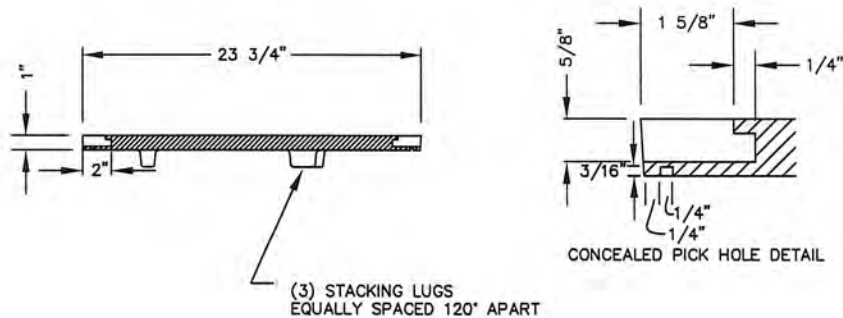
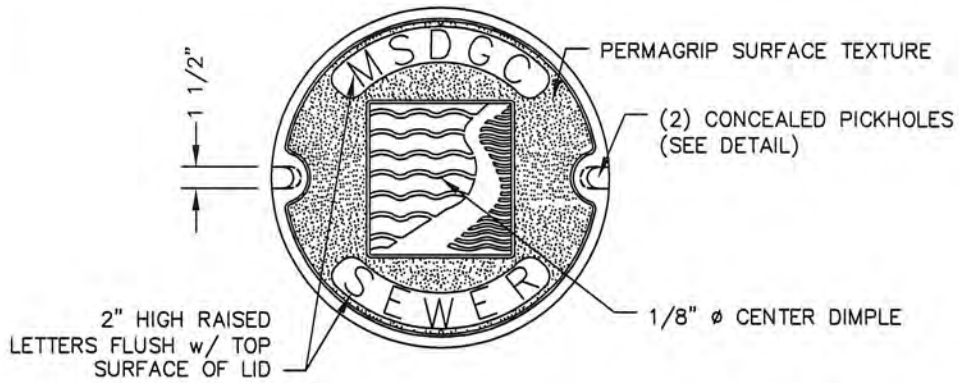
ALTERNATE
BATTER BOARD

NO SCALE

DATE: AUG., 2006

APPROVED:

SEWERS CHIEF ENGINEER



NOTE:


FOR USE WITH STANDARD MANHOLE FRAME ACC. NO. 49005. THIS COVER SHALL BE USED ONLY WHERE SPECIFIED ON THE PLANS.

FOR MEASUREMENTS, MATERIAL FINISH, AND INSPECTION, REFER TO PURCHASING SPEC. NO. 11-34 (LATEST EDITION).

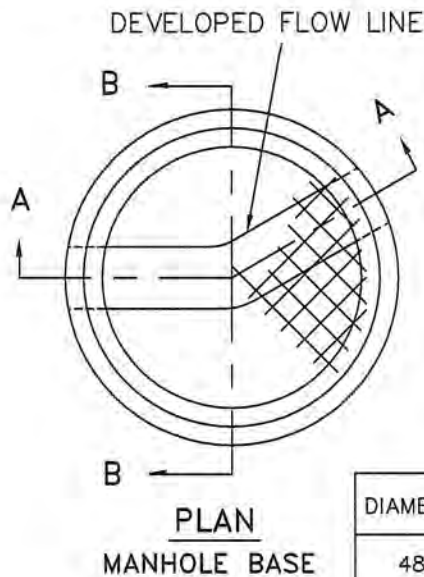
COMPUTED WEIGHTS
LID 120lbs.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**SELF - SEALING
MANHOLE LID**

NO SCALE
APPROVED:


SEWERS CHIEF ENGINEER

DATE: AUG., 2006



PIPE DIAMETER	DIMENSION			
	A	B	C	D
8" THRU 18"	48"	5"	2"-3"	UP TO 1 1/2"
21" & 24"	48"	5"*	2"-3"	"
	60"	6"*	2"-3"	"
27" - 36"	60"	6"	2"-3"	UP TO 1 1/2"

* MOVEABLE PANEL CONSTRUCTION MAY BE USED PROVIDING 5" MIN. THICKNESS PROVIDED.

REINFORCEMENT STEEL
PER A.S.T.M. C478

DIAMETER	REINFORCING ITEM	
	E	F
48"	A ^S = 0.12 SQ. IN./FT. (CIRCUMFERENTIAL)	A ^S = 0.12 SQ. IN./FT. (BOTH WAYS)
60"	A ^S = 0.15 SQ. IN./FT. (CIRCUMFERENTIAL)	A ^S = 0.12 SQ. IN./FT. (BOTH WAYS)

PRECAST MANHOLE BASE MAY BE USED ON 8" TO 36" CONDUIT UNLESS OTHERWISE NOTED ON THE PLANS.

PRECAST MANHOLE BASE SHALL NOT BE USED IF THE GRADE OF THE INFLUENT OR EFFLUENT CONDUIT EXCEEDS 10%, UNLESS THE SEAL BETWEEN THE PRECAST MANHOLE BASE AND INFLUENT AND/OR EFFLUENT LINES IS CAST IN A SKEW TO ACCEPT LARGER GRADES. ALL MATERIAL SHALL BE IN ACCORDANCE WITH SECTION 706.13 OF THE STATE OF OHIO SPECIFICATIONS EXCEPT AS OTHERWISE NOTED HEREIN.

ALL CONCRETE SHALL BE CLASS "C".

THE GASKET BETWEEN THE PRECAST MANHOLE BASE AND THE MANHOLE RISERS SHALL MEET THE REQUIREMENTS OF A.S.T.M. C-443, EXCEPT THAT ONLY "O" RING AND PROFILE GASKETS ARE ACCEPTABLE.

THE SEAL BETWEEN PRECAST MANHOLE BASE AND INFLUENT AND/OR EFFLUENT CONDUIT SHALL BE A RUBBER GASKET, "A-LOK", "KOR-N-SEAL", "DURA-SEAL" OR AN APPROVED EQUAL.

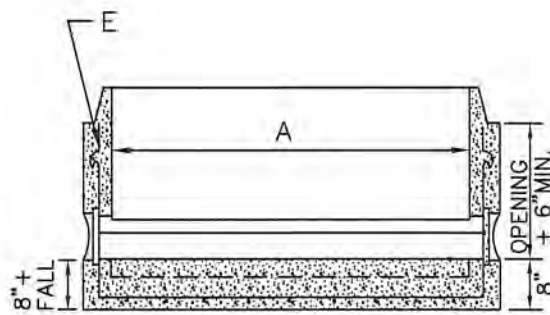
OPENINGS FOR INFLUENT AND EFFLUENT CONDUIT SHALL BE PROVIDED TO MEET THE PROJECT REQUIREMENTS.

THE PRECAST BASE SHALL HAVE THE FLOOR AND SIDE WALL CAST AS ONE UNIT; IF THE FLOW LINE (CHANNEL) AND BENCHES ARE NOT CAST AS A PART OF FLOOR AND SIDE WALL, THEY SHALL BE CAST OF CONCRETE AT THE PLACE OF MANUFACTURE.

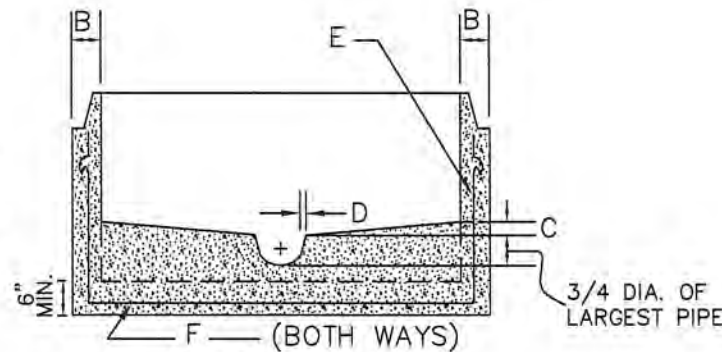
LIFT HOLES IN PRECAST MANHOLE BASE TO BE SEALED WITH HYDRAULIC CEMENT.

ALL CHARACTERISTICS NOT SHOWN HEREON SHALL BE SIMILAR TO STANDARD MANHOLE ACC. NO. 49037 OR 49049.

PRECAST MANHOLE BASES SHALL BE INSTALLED ON A 6" MINIMUM GRAVEL BASE (#57 CLEAN WASHED).



SECTION A-A



SECTION B-B

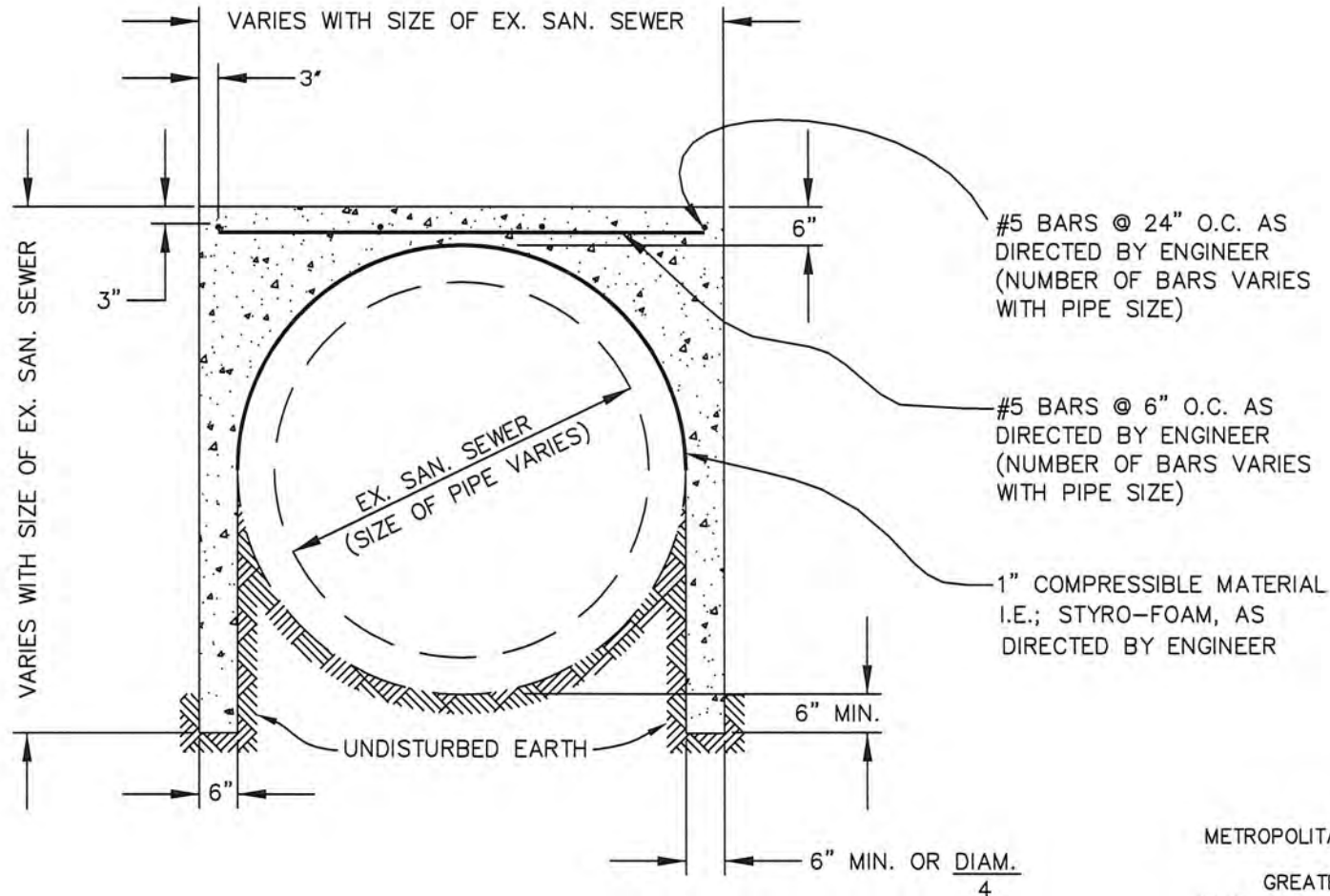
THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD
PRECAST CONCRETE
MANHOLE BASE

NO SCALE DATE: DEC. 2010
APPROVED: *Ralph Johnston*
SEWERS CHIEF ENGINEER

M.C.

ACC. NO. 49056

NOTE: CONCRETE SHALL BE CLASS "C".



#5 BARS @ 24" O.C. AS DIRECTED BY ENGINEER (NUMBER OF BARS VARIES WITH PIPE SIZE)

#5 BARS @ 6" O.C. AS DIRECTED BY ENGINEER (NUMBER OF BARS VARIES WITH PIPE SIZE)

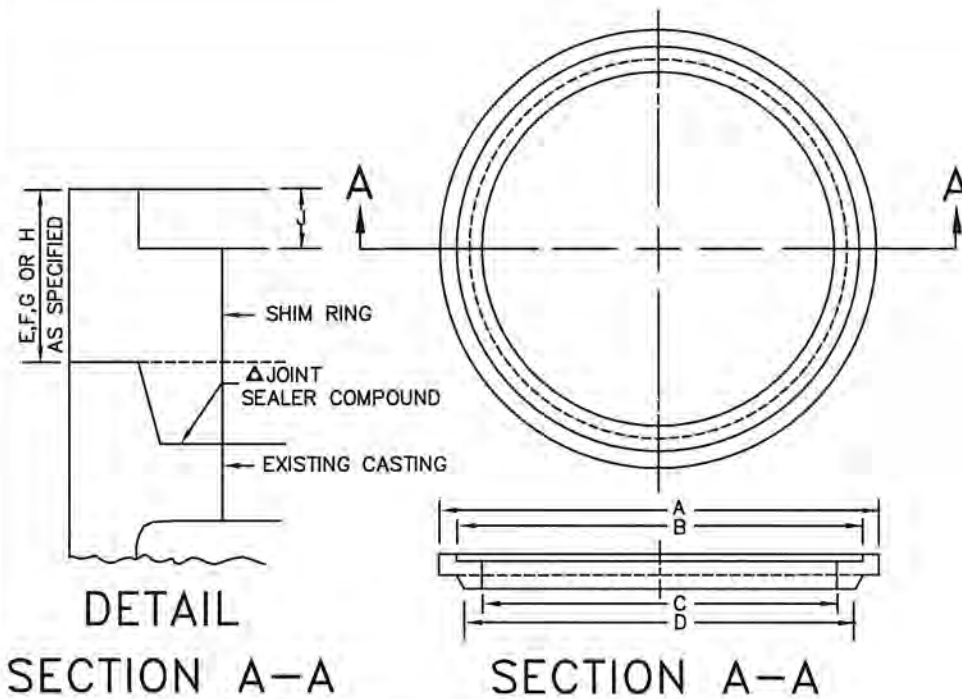
1" COMPRESSIBLE MATERIAL I.E.; STYRO-FOAM, AS DIRECTED BY ENGINEER

THE METROPOLITAN SEWER DISTRICT OF GREATER CINCINNATI
TYPICAL ENCASEMENT FOR EXISTING SANITARY PIPE

NO SCALE DATE: AUG., 2006
APPROVED: [Signature] SEWERS CHIEF ENGINEER

C.J.K./T.R.S.

ACC. NO. 49057



DETAIL

SECTION A-A

SECTION A-A

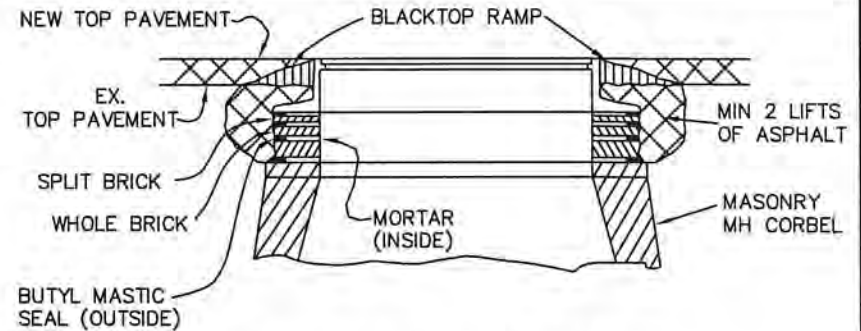
CASTING	DIMENSIONS IN INCHES									
	A	B	C	D	E	F	G	H	J	
MANHOLE	26	24	21½	23¾	1½	2	2½	3	1	

MATERIAL - ASTM DESIGNATION: A-48, CLASS 40 CAST IRON

INSTALLATION OF SHIM RING*

*ONLY USED WITH SPECIAL PERMISSION FROM MSD OR THEIR REPRESENTATIVES

1. CLEAN CASTING WITH WIRE BRUSH.
 2. INSERT SHIM AND CHECK FIT.
 3. IF SHIM DOES NOT FIT PROPERLY, CASTING SHALL BE ADJUSTED BY USING BRICK AND MORTAR.
 4. REMOVE SHIM AND APPLY JOINT SEALER COMPOUND TO CASTING SEATING SURFACE.
 5. INSERT SHIM ON CASTING - STACKING OF RINGS SHALL NOT BE PERMITTED.
 6. USE PAVING BREAKER TO CUT OUT AROUND CASTING, 6"W. X 1 1/2"D.
 7. ADD STORAGE MIX BLACKTOP TO CUT AND FORM RAMP TO LIP OF CASTING. TAMP FIRMLY. RAMP SHALL BE REMOVED IMMEDIATELY PRIOR TO MACHINE PAVING.
 8. ALL MANHOLE FRAMES AND COVERS, OTHER THAN STANDARD, SHALL BE REPLACED WITH STANDARD CASTINGS. (ACC. NO. 49005)
- ▲ IN ACCORDANCE WITH 706.10 OF THE STATE OF OHIO CONSTRUCTION AND MATERIALS SPECIFICATION.



INSTALLATION OF BRICK AND MORTAR

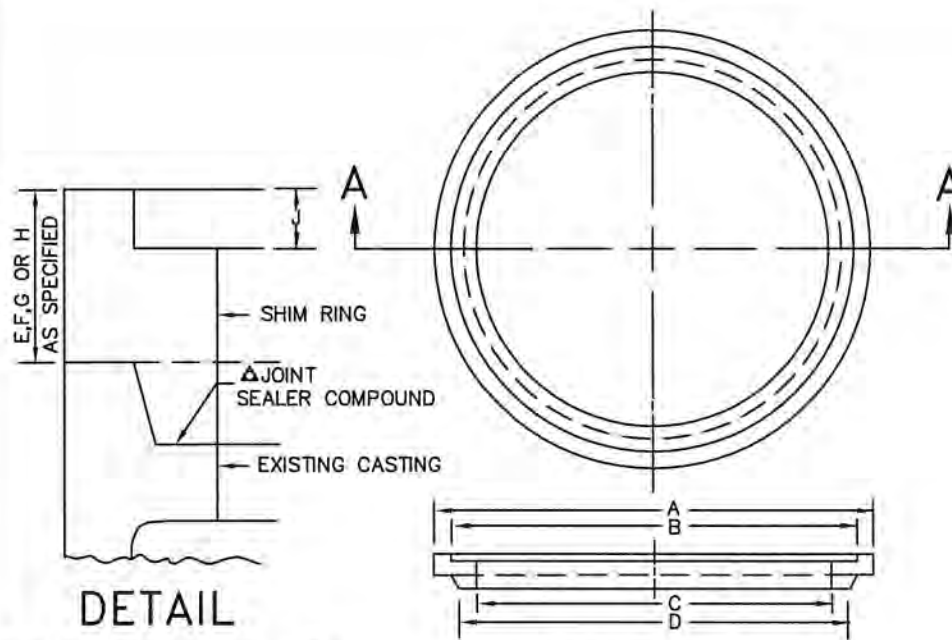
1. ALL MANHOLES ADJUSTED WITH BRICK AND MORTAR PRIOR TO MACHINE PAVING ARE PERMITTED TO BE ROUND CUT.
2. IF NEW ADJUSTMENT OF MANHOLE ELEVATES CASTING GREATER THAN 12" ABOVE CORBEL SECTION OF MANHOLE, THAT MANHOLE SHALL BE RECONSTRUCTED IN ACCORDANCE WITH 604.03 OF THE CITY SUPPLEMENT OF THE STATE OF OHIO CONSTRUCTION AND MATERIAL SPECIFICATIONS.
3. IF NEW ADJUSTMENT OF EXISTING MANHOLE IS LESS THAN 12" ABOVE CORBEL, THE CASTING SHALL BE CUT OUT TO TOP OF EXISTING MASONRY.
4. APPLY TACK COAT TO INSIDE EDGE OF CUT AND TO MANHOLE CASTING PRIOR TO PLACING ASPHALT.
5. THE CASTING SHALL THEN BE RAISED WITH A COMBINATION OF WHOLE AND/OR HALF BRICKS AND MORTAR TO DESIRED HEIGHT. THESE ADJUSTMENTS SHALL BE IN ACCORDANCE WITH 604.05 OF THE STATE OF OHIO CONSTRUCTION AND MATERIALS SPECIFICATIONS.
6. A MINIMUM OF TWO LIFTS OF ASPHALT SHALL BE USED FROM BOTTOM OF CUT TO EXISTING STREET PAVEMENT.
7. ADD STORAGE MIX BLACKTOP TO FORM RAMP TO LIP OF CASTING. TAMP FIRMLY. RAMP SHALL BE REMOVED IMMEDIATELY PRIOR TO MACHINE PAVING.
8. ALL MANHOLE FRAMES AND COVERS, OTHER THAN STANDARD, SHALL BE REPLACED WITH STANDARD CASTINGS. (ACC. NO. 49005)

NOTE: BRICK & MORTAR ADJUSTMENT CAN ONLY BE USED WITH SPECIAL PERMISSION FROM MSD OR THEIR REPRESENTATIVES. (SEE ACC. NO. 49058-A FOR TYPICAL MANHOLE ADJUSTMENT STANDARD.)

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**SANITARY MANHOLE ADJUSTMENT
USING BRICK AND MORTAR
PRIOR TO MACHINE PAVING**

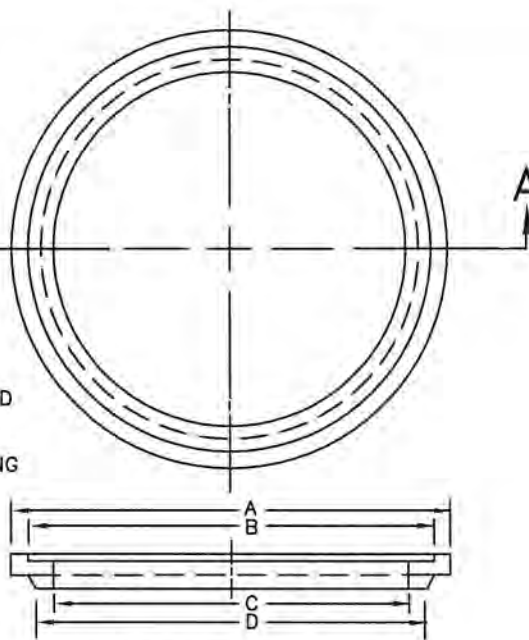
NO SCALE DATE: MAY 2016
APPROVED: *P. Amato*
SEWERS CHIEF ENGINEER

(FORMERLY ACC. NO. 53941)



DETAIL

SECTION A-A



SECTION A-A

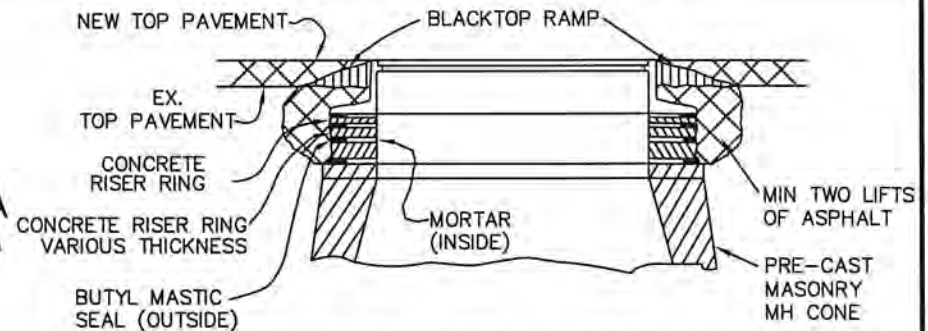
CASTING	DIMENSIONS IN INCHES									
	A	B	C	D	E	F	G	H	J	
MANHOLE	26	24	21½	23¾	1½	2	2½	3	1	

MATERIAL - ASTM DESIGNATION: A-48, CLASS 40 CAST IRON

INSTALLATION OF SHIM RING*

* ONLY TO BE USED WITH SPECIAL PERMISSION FROM MSD OR THEIR REPRESENTATIVE

1. CLEAN CASTING WITH WIRE BRUSH.
 2. INSERT SHIM AND CHECK FIT.
 3. IF SHIM DOES NOT FIT PROPERLY, CASTING SHALL BE ADJUSTED BY USING CONCRETE RING AND MORTAR.
 4. REMOVE SHIM AND APPLY JOINT SEALER COMPOUND TO CASTING SEATING SURFACE.
 5. INSERT SHIM ON CASTING - STACKING OF RINGS SHALL NOT BE PERMITTED.
 6. USE PAVING BREAKER TO CUT OUT AROUND CASTING, 6"W. X 1 1/2"D.
 7. ADD STORAGE MIX BLACKTOP TO CUT AND FORM RAMP TO LIP OF CASTING. TAMP FIRMLY. RAMP SHALL BE REMOVED IMMEDIATELY PRIOR TO MACHINE PAVING.
 8. ALL MANHOLE FRAMES AND COVERS, OTHER THAN STANDARD, SHALL BE REPLACED WITH STANDARD CASTINGS. (ACC. NO. 49005)
- Δ IN ACCORDANCE WITH 706.10 OF THE STATE OF OHIO CONSTRUCTION AND MATERIALS SPECIFICATION.



INSTALLATION OF CONCRETE RINGS AND MORTAR

1. ALL MANHOLES ADJUSTED WITH CONCRETE RINGS AND MORTAR PRIOR TO MACHINE PAVING ARE PERMITTED TO BE ROUND CUT.
2. IF NEW ADJUSTMENT OF MANHOLE ELEVATES CASTING GREATER THAN 12" ABOVE CONE SECTION OF MANHOLE, THAT MANHOLE SHALL BE RECONSTRUCTED IN ACCORDANCE WITH 604.03 OF THE CITY SUPPLEMENT OF THE STATE OF OHIO CONSTRUCTION AND MATERIAL SPECIFICATIONS.
3. IF NEW ADJUSTMENT OF EXISTING MANHOLE IS LESS THAN 12" ABOVE CONE, THE CASTING SHALL BE CUT OUT TO TOP OF EXISTING MASONRY.
4. APPLY TACK COAT TO INSIDE EDGE OF CUT AND TO MANHOLE CASTING PRIOR TO PLACING ASPHALT.
5. THE CASTING SHALL THEN BE RAISED WITH A COMBINATION OF CONCRETE RISER RINGS AND MORTAR TO DESIRED HEIGHT. THESE ADJUSTMENTS SHALL BE IN ACCORDANCE WITH 604.05 OF THE STATE OF OHIO CONSTRUCTION AND MATERIALS SPECIFICATIONS.
6. A MINIMUM TWO LIFTS OF ASPHALT SHALL BE USED FROM BOTTOM OF CUT TO EXISTING STREET PAVEMENT.
7. ADD STORAGE MIX BLACKTOP TO FORM RAMP TO LIP OF CASTING. TAMP FIRMLY. RAMP SHALL BE REMOVED IMMEDIATELY PRIOR TO MACHINE PAVING.
8. ALL MANHOLE FRAMES AND COVERS, OTHER THAN STANDARD, SHALL BE REPLACED WITH STANDARD CASTINGS. (ACC. NO. 49005)
9. CONCRETE RISER SHALL HAVE A MINIMUM OF 1-#3 CONTINUOUS REINFORCING BAR IN CENTER.

NOTE: IF THE MANHOLE IS NOT PRECAST, THEN BRICK AND MORTAR SHALL BE PERMITTED.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI

**SANITARY MANHOLE ADJUSTMENT WITH
PRECAST CONCRETE RING & MORTAR
PRIOR TO MACHINE PAVING**

NO SCALE DATE: MAY 2016

APPROVED: *P. Smith*
SEWERS CHIEF ENGINEER

M.C.

(ALTERNATE FOR ACC. NO. 49058)

ACC. NO. 49058-A

ALLOWABLE CONDUIT SLOPE ENTERING AND EXITING THE MANHOLE SHALL BE A SPECIFIC MAXIMUM AND MINIMUM VALUE AS PER THE FOLLOWING TABLE:

PIPE SIZE	MIN. % SLOPE	MAX. % SLOPE
6"	2.00	2.2
8"	0.70	2.0
10"*	0.50	1.8
12"	0.40	1.6
15"	0.30	1.5
18"	0.24	1.4
21"	0.19	1.4

*10" CONDUIT NOT APPROVED FOR NEW INSTALLATIONS.

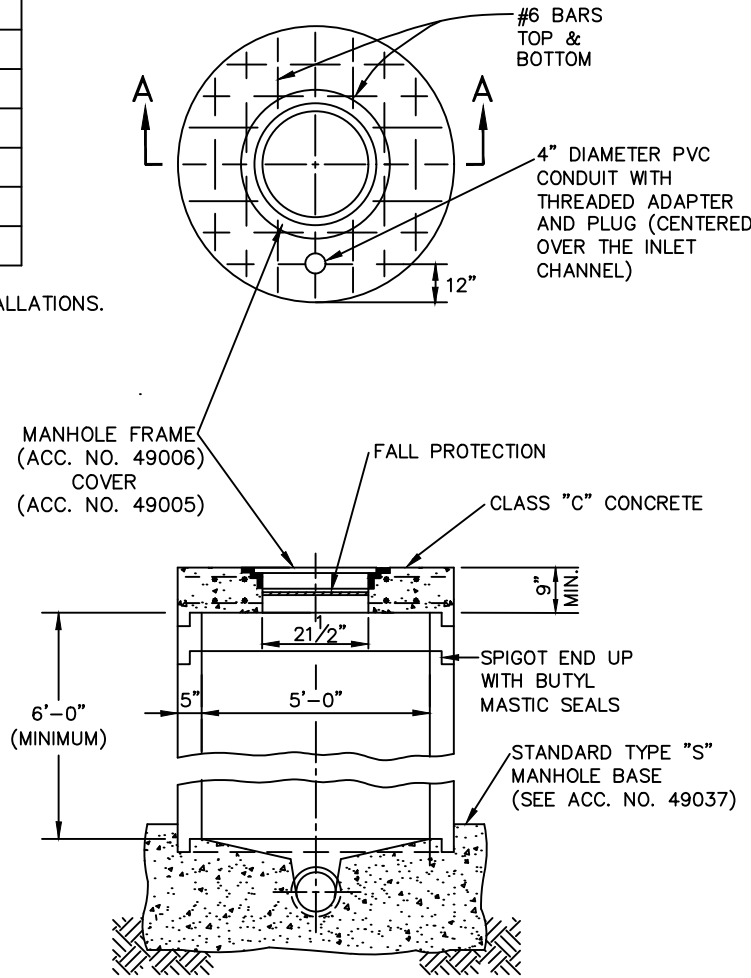
NOTES:

NO BENDS, DROP MANHOLES, FLOW JUNCTIONS, ETC., SHALL BE LOCATED WITHIN 25 PIPE DIAMETERS UPSTREAM OF THE CENTER OF THE MANHOLE.

DOWNSTREAM CONDUIT SLOPE SHALL BE GREATER THAN OR EQUAL TO THE UPSTREAM CONDUIT SLOPE WITH NO OBSTRUCTIONS LOCATED WITHIN TEN PIPE DIAMETERS DOWNSTREAM OF THE CENTER OF THE MANHOLE.

FALL PROTECTION REQUIREMENT:

A GRATED COVER CAPABLE OF SUPPORTING AT LEAST 1,600 POUNDS AND SECURED TO PREVENT ACCIDENTAL DISPLACEMENT SHALL BE PROVIDED. THE COVER SHALL BE OF A SLOTTED MATERIAL TO ALLOW VISUAL INSPECTION, VENTILATION, AND PASS THROUGH OF SAMPLE & BUBBLE LINES AS NEEDED. ADDITIONALLY, THE COVER MUST HAVE A HATCH OR FLOOR HOLE CENTRALLY LOCATED OVER THE PRIMARY MEASURING DEVICE THAT IS AT LEAST 8", BUT NOT MORE THAN 12"x12", THROUGH WHICH SAMPLES CAN BE TAKEN. THIS REQUIREMENT IS WAIVED FOR MANHOLES LESS THAN 4' IN DEPTH.



SECTION A-A

NOTES:

IN PROTECTED NON-TRAFFIC AREAS, THE STANDARD TYPE "C" SAMPLING AND GAUGING MANHOLE MAY BE USED WITH PRIOR APPROVAL.

ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 2" BOTH FACES.

JOINTS ON MANHOLE SECTIONS SHALL BE MADE WITH A RUBBER GASKET MEETING THE REQUIREMENT OF ASTM C-443, EXCEPT THAT ONLY "O" RING AND PROFILE GASKETS ARE ACCEPTABLE.

LIFT HOLES IN MANHOLES TO BE SEALED WITH HYDRAULIC CEMENT.

1' PRECAST MANHOLE SECTION TO BE SET WHEN MANHOLE TOP IS POURED.

ALL OTHER CHARACTERISTICS ARE SIMILAR TO STANDARD MANHOLES.

ALL CONCRETE SHALL BE CLASS "C".

PRECAST CONCRETE BARRELS SHALL BE IN ACCORDANCE WITH ITEM 706.13 OF THE SPECIFICATIONS.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**STANDARD TYPE "A"
SAMPLING & GAUGING
MANHOLE**

NO SCALE DATE: JULY, 2021

APPROVED: *Nyan Well*
SEWERS CHIEF ENGINEER

NOTES:

AN ALUMINUM 3'-6" SQUARE SINGLE LEAF HINGED DOOR (BILCO J-5AL, OR EQUAL) SHALL BE INSTALLED IN THE MANHOLE SLAB TOP. A 3'-0" DOOR SHALL BE ALLOWED IN A PRECAST TOP. THE HINGED SIDE OF THE SQUARE LID IS TO BE ORIENTED PARALLEL TO THE DOWNSTREAM FLOW DIRECTION.

STEPS IN THE BARREL SECTION OF THE PRE-CAST MANHOLE ARE TO BE INSTALLED IN ALIGNMENT WITH THE DOWNSTREAM CORNER OF THE SQUARE LID ON THE OPPOSITE SIDE FROM THE LID HINGE.

A SEVEN BY ELEVEN FOOT CONCRETE PAD, FIVE INCHES THICK AND LEVEL WITH THE MANHOLE SLAB TOP, SHALL BE CONSTRUCTED SUCH THAT A MINIMUM FOUR FOOT SECTION IS ORIENTED OVER THE INLET PIPE.

ALLOWABLE CONDUIT SLOPE ENTERING AND EXITING THE MANHOLE SHALL BE LIMITED TO A SPECIFIC MAXIMUM AND MINIMUM AS PER THE FOLLOWING TABLE:

PIPE SIZE	MIN. % SLOPE	MAX. % SLOPE
6"	2.00	2.2
8"	0.70	2.0
10"*	0.50	1.8
12"	0.40	1.6
15"	0.30	1.5
18"	0.24	1.4
21"	0.19	1.4

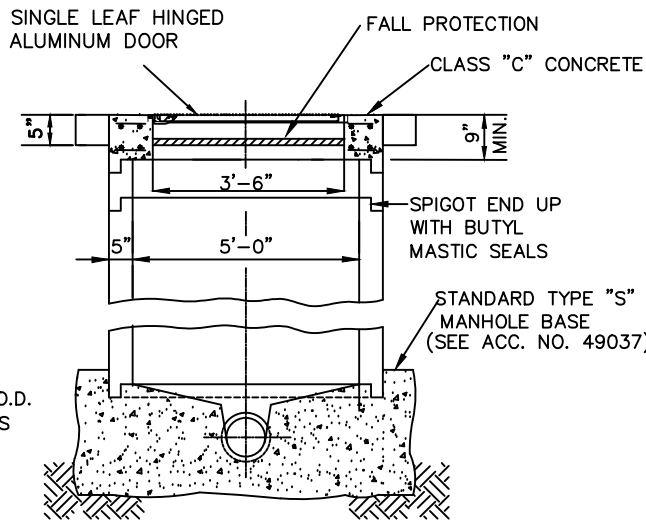
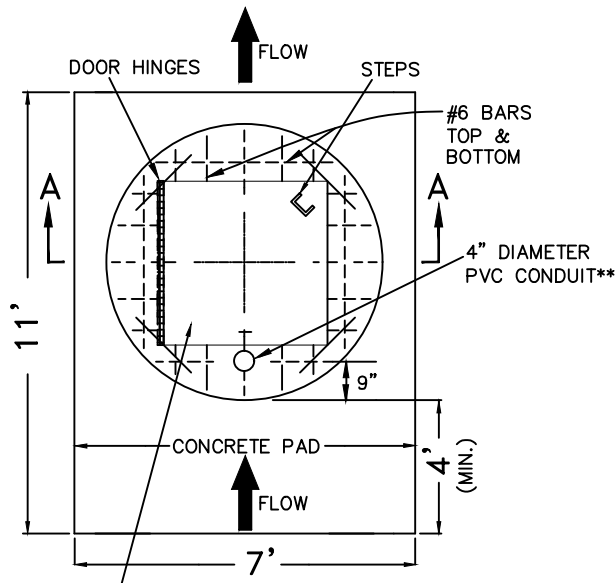
* 10" CONDUIT NOT APPROVED FOR NEW INSTALLATIONS
NO BENDS, DROP MANHOLES, FLOW JUNCTIONS, ETC., SHALL BE LOCATED WITHIN 25 PIPE DIAMETERS UPSTREAM OF THE CENTER OF THE MANHOLE.

DOWNSTREAM CONDUIT SLOPE SHALL BE GREATER THAN OR EQUAL TO UPSTREAM CONDUIT SLOPE WITH NO OBSTRUCTION WITHIN TEN PIPE DIAMETERS DOWNSTREAM OF THE CENTER OF THE MANHOLE.

AN APPROPRIATELY SIZED FLUME (PLASTIFAB WITH INTEGRAL APPROACH, OR EQUAL) SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS WITH THE FOLLOWING "BUILT-IN ATTACHMENTS: THE FLUME SHALL HAVE TWO 1/4" O.D. STAINLESS STEEL BUBBLE LINES AND ONE 3/8" O.D. STAINLESS STEEL SAMPLE LINE. THE TWO BUBBLE LINES PLUMBED TO THE SURFACE THROUGH THE 4" CONDUIT IN A MANNER THAT DOES NOT RESTRICT WORKING IN THE MANHOLE. PLEASE CALL THE DIVISION OF INDUSTRIAL WASTE AT 557-7012 FOR INSPECTION OF THE FLUME AND BUBBLE TUBE INSTALLATION."

A TWO OUTLET, GFCI, 110 VOLT, AC ELECTRICAL SUPPLY SHALL BE SUPPLIED FOR EXCLUSIVE USE BY MSD AT THE CONCRETE PAD, OR WITHIN FIFTY FEET SO THAT THE ROUTE OF AN EXTENSION CORD WILL NOT CROSS A TRAFFIC ZONE.

GENERAL AREA LIGHTING SHALL BE PROVIDED TO ILLUMINATE THE VICINITY OF THE METERING MANHOLE.



SECTION A-A

NOTES:

**4" DIAMETER PVC CONDUIT, WITH THREADED ADAPTOR AND PLUG (CENTERED OVER THE INLET CHANNEL), SHALL EXTEND THROUGH THE MANHOLE SLAB TOP.

6' LONG, 4" I.D. CAST IRON PIPE GUARD POSTS SHALL BE INSTALLED, AS DIRECTED BY THE ENGINEER, TO PREVENT VEHICULAR DAMAGE TO THE METERING MANHOLE. GUARD POSTS SHALL BE FILLED WITH CONCRETE AND INSTALLED 4' DEEP.

PARKING SHALL BE PROVIDED WITHIN 100 FEET OF THE MANHOLE FOR TWO MSD CONFINED SPACE ENTRY SUPPORT VANS. THE ROUTE FROM PARKING TO THE MANHOLE, FOR BREATHING AIR LINES, SHALL NOT CROSS A TRAFFIC ZONE.

ALL LOCKING MECHANISMS SHALL UTILIZE DUAL LOCKS, ONE SUPPLIED BY MSD AND THE OTHER SUPPLIED BY THE OWNER.

ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 2" BOTH FACES

ALL OTHER CHARACTERISTICS ARE SIMILAR TO STANDARD MANHOLES.

FALL PROTECTION REQUIREMENT:

A GRATED COVER CAPABLE OF SUPPORTING AT LEAST 1,600 POUNDS AND SECURED TO PREVENT ACCIDENTAL DISPLACEMENT SHALL BE PROVIDED. THE COVER SHALL BE OF A SLOTTED MATERIAL TO ALLOW VISUAL INSPECTION, VENTILATION, AND PASS THROUGH OF SAMPLE & BUBBLE LINES AS NEEDED. ADDITIONALLY, THE COVER MUST HAVE A HATCH OR FLOOR VANS CENTRALLY LOCATED OVER THE PRIMARY MEASURING DEVICE THAT IS AT LEAST 8", BUT NOT MORE THAN 12"x12", THROUGH WHICH SAMPLES CAN BE TAKEN. THIS REQUIREMENT IS WAIVED FOR MANHOLES LESS THAN 4' IN DEPTH.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD TYPE "C"
SAMPLING & GAUGING MANHOLE
(FOR USE IN NON-TRAFFIC AREAS ONLY)

NO SCALE

DATE: JULY 2021

APPROVED:

Ryan Wolf

SEWERS CHIEF ENGINEER

FOR USE IN TRAFFIC AREAS ONLY.

AN ALUMINUM 3'-6" SQUARE SINGLE LEAF HINGED DOOR (BILCO H20, OR EQUAL) SHALL BE INSTALLED IN THE MANHOLE SLAB TOP. THE HINGED SIDE OF THE SQUARE LID IS TO BE ORIENTED PARALLEL TO THE DOWNSTREAM FLOW DIRECTION.

DOWNSTREAM CONDUIT SLOPE SHALL BE GREATER THAN OR EQUAL TO UPSTREAM CONDUIT SLOPE WITH NO NO OBSTRUCTION WITHIN TEN PIPE DIAMETERS DOWNSTREAM OF THE CENTER OF THE MANHOLE.

NO BENDS, DROP MANHOLES, FLOW JUNCTIONS, ETC., SHALL BE LOCATED WITHIN 25 PIPE DIAMETERS UPSTREAM OF THE CENTER OF THE MANHOLE.

ALLOWABLE CONDUIT SLOPE ENTERING AND EXITING THE MANHOLE SHALL BE LIMITED TO A SPECIFIC MAXIMUM AND MINIMUM AS PER THE FOLLOWING TABLE:

PIPE SIZE	MIN. % SLOPE	MAX. % SLOPE
6"	2.00	2.2
8"	0.70	2.0
10"*	0.50	1.8
12"	0.40	1.6
15"	0.30	1.5
18"	0.24	1.4
21"	0.19	1.4

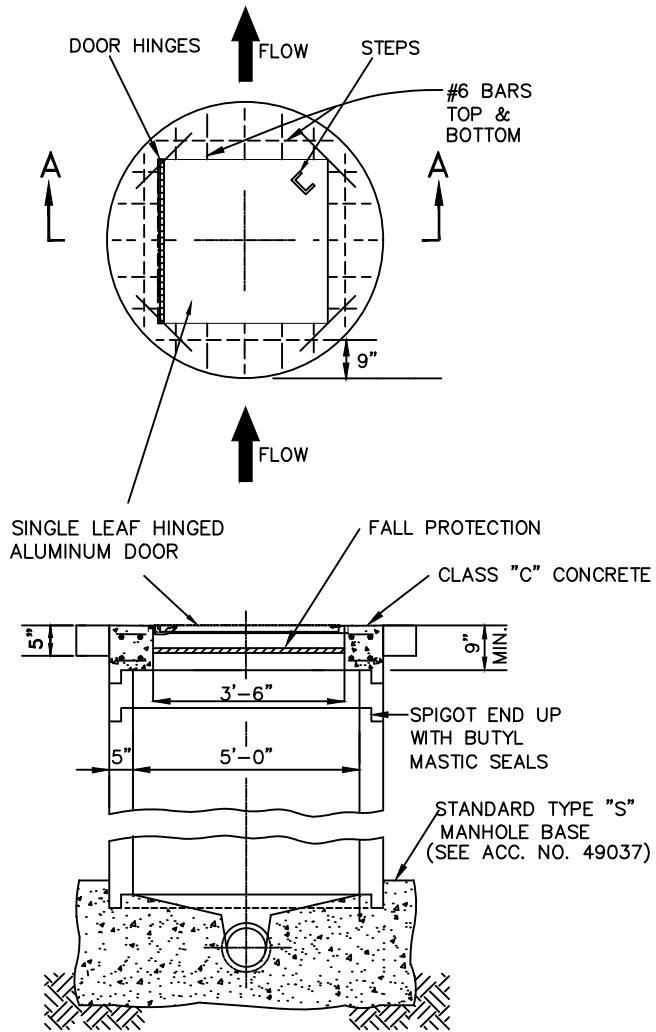
* 10" CONDUIT NOT APPROVED FOR NEW INSTALLATIONS

STEPS IN THE BARREL SECTION OF THE PRE-CAST MANHOLE ARE TO BE INSTALLED IN ALIGNMENT WITH THE DOWNSTREAM CORNER OF THE SQUARE LID ON THE OPPOSITE SIDE FROM THE LID HINGE.

IN A TRAFFIC AREA, THE SLAB COVER MUST BE SLIGHTLY RAISED ABOVE THE SURROUNDING AREA TO PREVENT INFILTRATION OF STORMWATER.

FALL PROTECTION REQUIREMENT:

A GRATED COVER CAPABLE OF SUPPORTING AT LEAST 1,600 POUNDS AND SECURED TO PREVENT ACCIDENTAL DISPLACEMENT SHALL BE PROVIDED. THE COVER SHALL BE OF A SLOTTED MATERIAL TO ALLOW VISUAL INSPECTION, VENTILATION, AND PASS THROUGH OF SAMPLE & BUBBLE LINES AS NEEDED. ADDITIONALLY, THE COVER MUST HAVE A HATCH OR FLOOR HOLE CENTRALLY LOCATED OVER THE PRIMARY MEASURING DEVICE THAT IS AT LEAST 8", BUT NOT MORE THAN 12"x12", THROUGH WHICH SAMPLES CAN BE TAKEN. THIS REQUIREMENT IS WAIVED FOR MANHOLES LESS THAN 4' IN DEPTH.



SECTION A-A

NOTES:

- ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 2" BOTH FACES
- JOINTS ON MANHOLE SECTIONS SHALL BE MADE WITH A RUBBER GASKET MEETING THE REQUIREMENT OF ASTM C-443, EXCEPT THAT ONLY "O" RING AND PROFILE GASKETS ARE ACCEPTABLE.
- LIFT HOLES IN MANHOLES TO BE SEALED WITH HYDRAULIC CEMENT.
- 1' PRECAST MANHOLE SECTION TO BE SET WHEN MANHOLE TOP IS POURED.
- ALL OTHER CHARACTERISTICS ARE SIMILAR TO STANDARD MANHOLES.
- ALL CONCRETE SHALL BE CLASS "C".
- PRECAST CONCRETE BARRELS SHALL BE IN ACCORDANCE WITH ITEM 706.13 OF THE SPECIFICATIONS.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD TYPE "D"
SAMPLING & GAUGING MANHOLE
(FOR USE IN TRAFFIC AREAS ONLY)

NO SCALE DATE: JULY 2021

APPROVED: *Ryan Well*
SEWERS CHIEF ENGINEER

NOTES:

FOR USE IN NON-TRAFFIC AREAS ONLY.

AN ALUMINUM 3'-6" SQUARE SINGLE LEAF HINGED DOOR (BILCO J-5AL, OR EQUAL) SHALL BE INSTALLED IN THE MANHOLE SLAB TOP. THE HINGED SIDE OF THE SQUARE LID IS TO BE ORIENTED PARALLEL TO THE DOWNSTREAM FLOW DIRECTION.

DOWNSTREAM CONDUIT SLOPE SHALL BE GREATER THAN OR EQUAL TO UPSTREAM CONDUIT SLOPE WITH NO OBSTRUCTION WITHIN TEN PIPE DIAMETERS DOWNSTREAM OF THE CENTER OF THE MANHOLE.

NO BENDS, DROP MANHOLES, FLOW JUNCTIONS, ETC., SHALL BE LOCATED WITHIN 25 PIPE DIAMETERS UPSTREAM OF THE CENTER OF THE MANHOLE.

ALLOWABLE CONDUIT SLOPE ENTERING AND EXITING THE MANHOLE SHALL BE LIMITED TO A SPECIFIC MAXIMUM AND MINIMUM AS PER THE FOLLOWING TABLE:

PIPE SIZE	MIN. % SLOPE	MAX. % SLOPE
6"	2.00	2.2
8"	0.70	2.0
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12"	0.40	1.6
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18"	0.24	1.4
21"	0.19	1.4

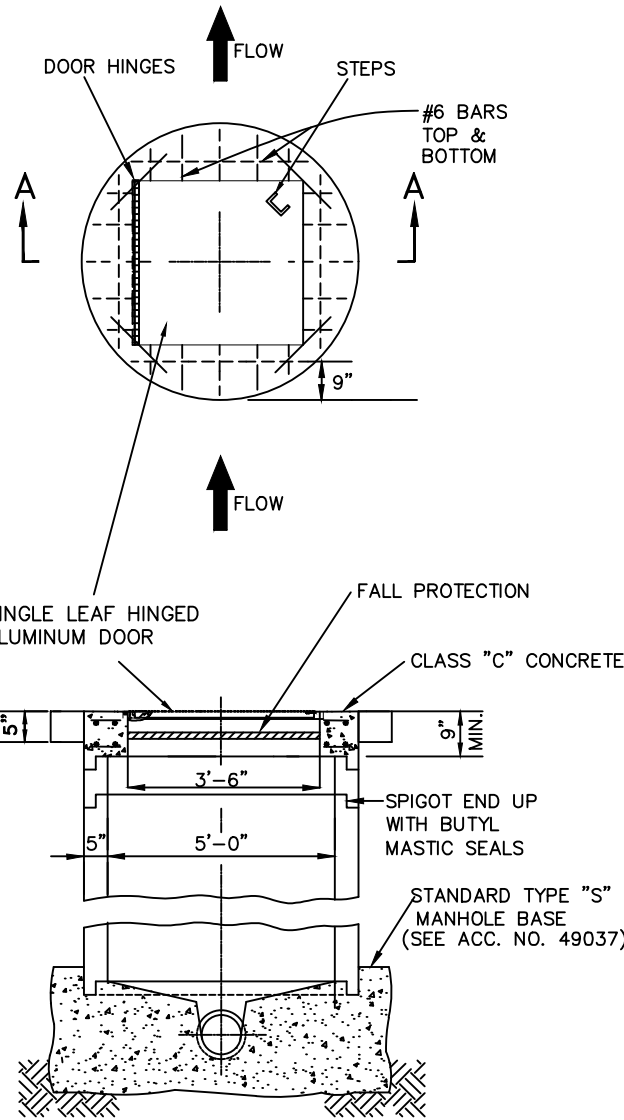
* 10" CONDUIT NOT APPROVED FOR NEW INSTALLATIONS

STEPS IN THE BARREL SECTION OF THE PRE-CAST MANHOLE ARE TO BE INSTALLED IN ALIGNMENT WITH THE DOWNSTREAM CORNER OF THE SQUARE LID ON THE OPPOSITE SIDE FROM THE LID HINGE.

THE MANHOLE SLAB TOP SHALL EXTEND 6"-18" FROM THE SURROUNDING SURFACE.

FALL PROTECTION REQUIREMENT:

A GRATED COVER CAPABLE OF SUPPORTING AT LEAST 1,600 POUNDS AND SECURED TO PREVENT ACCIDENTAL DISPLACEMENT SHALL BE PROVIDED. THE COVER SHALL BE OF A SLOTTED MATERIAL TO ALLOW VISUAL INSPECTION, VENTILATION, AND PASS THROUGH OF SAMPLE & BUBBLE LINES AS NEEDED. ADDITIONALLY, THE COVER MUST HAVE A HATCH OR FLOOR HOLE CENTRALLY LOCATED OVER THE PRIMARY MEASURING DEVICE THAT IS AT LEAST 8", BUT NOT MORE THAN 12"x12", THROUGH WHICH SAMPLES CAN BE TAKEN. THIS REQUIREMENT IS WAIVED FOR MANHOLES LESS THAN 4' IN DEPTH.



SECTION A-A

NOTES:

ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 2" BOTH FACES

JOINTS ON MANHOLE SECTIONS SHALL BE MADE WITH A RUBBER GASKET MEETING THE REQUIREMENT OF ASTM C-443, EXCEPT THAT ONLY "O" RING AND PROFILE GASKETS ARE ACCEPTABLE.

LIFT HOLES IN MANHOLES TO BE SEALED WITH HYDRAULIC CEMENT.

1' PRECAST MANHOLE SECTION TO BE SET WHEN MANHOLE TOP IS POURED.

ALL OTHER CHARACTERISTICS ARE SIMILAR TO STANDARD MANHOLES.

ALL CONCRETE SHALL BE CLASS "C".

PRECAST CONCRETE BARRELS SHALL BE IN ACCORDANCE WITH ITEM 706.13 OF THE SPECIFICATIONS.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD TYPE "E"
SAMPLING & GAUGING MANHOLE
(FOR USE IN NON-TRAFFIC AREAS ONLY)

NO SCALE

DATE: JULY 2021

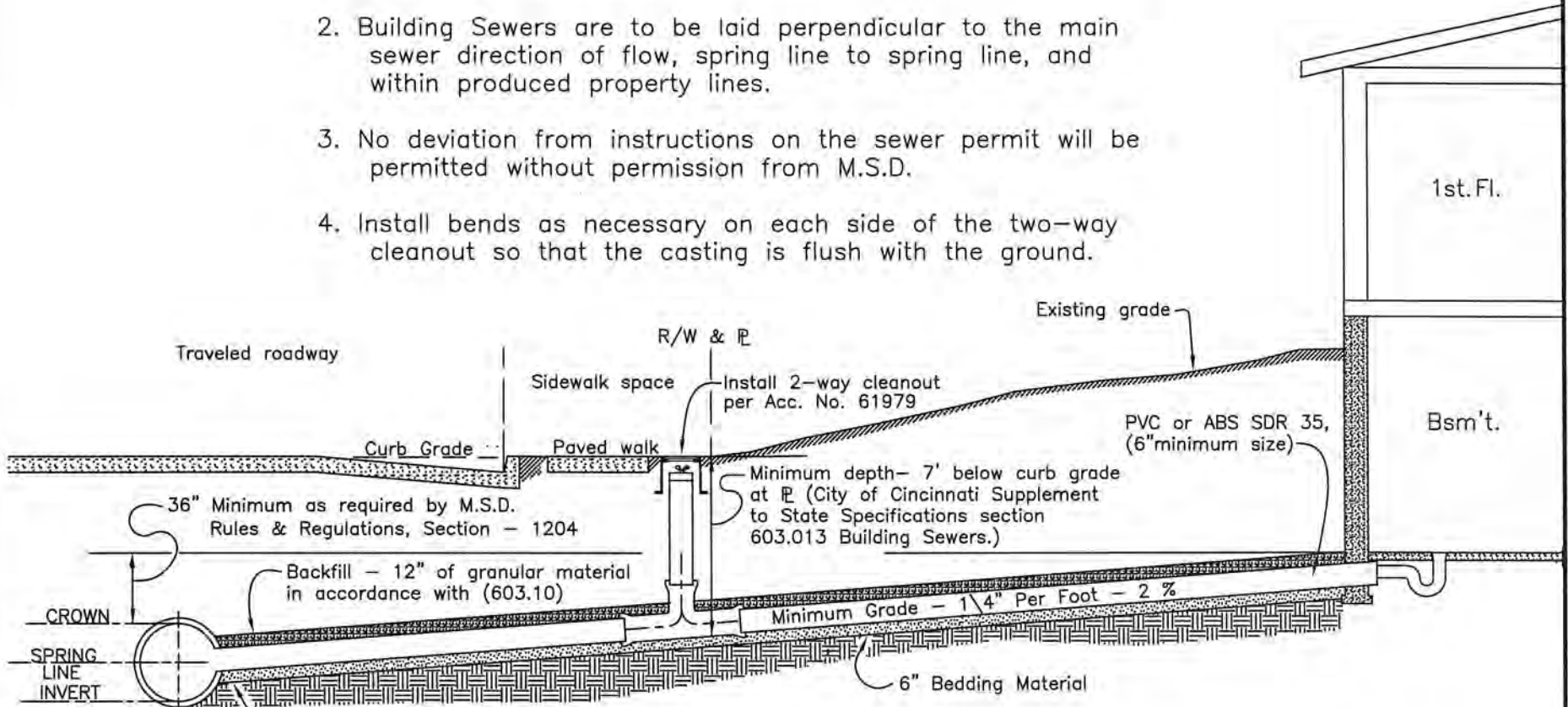
APPROVED:

Aya Wolf

SEWERS CHIEF ENGINEER

INSTRUCTIONS

1. Installation of Building Sewers shall be done in accordance with M.S.D. Rules and Regulations.
2. Building Sewers are to be laid perpendicular to the main sewer direction of flow, spring line to spring line, and within produced property lines.
3. No deviation from instructions on the sewer permit will be permitted without permission from M.S.D.
4. Install bends as necessary on each side of the two-way cleanout so that the casting is flush with the ground.

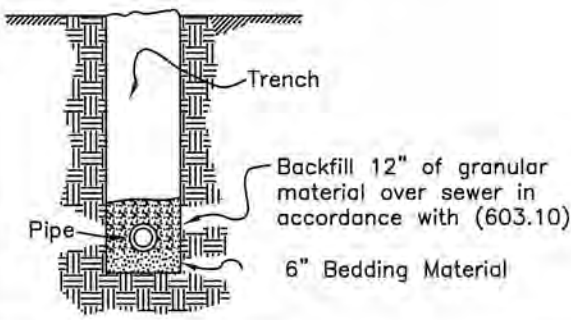


SEE ACC NO. 49033 for Connection and/or stack detail.

SEE ACC. NO. 49053 for Connection to a Brick Sewer.

All fittings used for 6" PVC or ABS pipe connections shall be Wye only fittings for new main line conduits.

Approved tapping saddles may be used for existing main line connections.

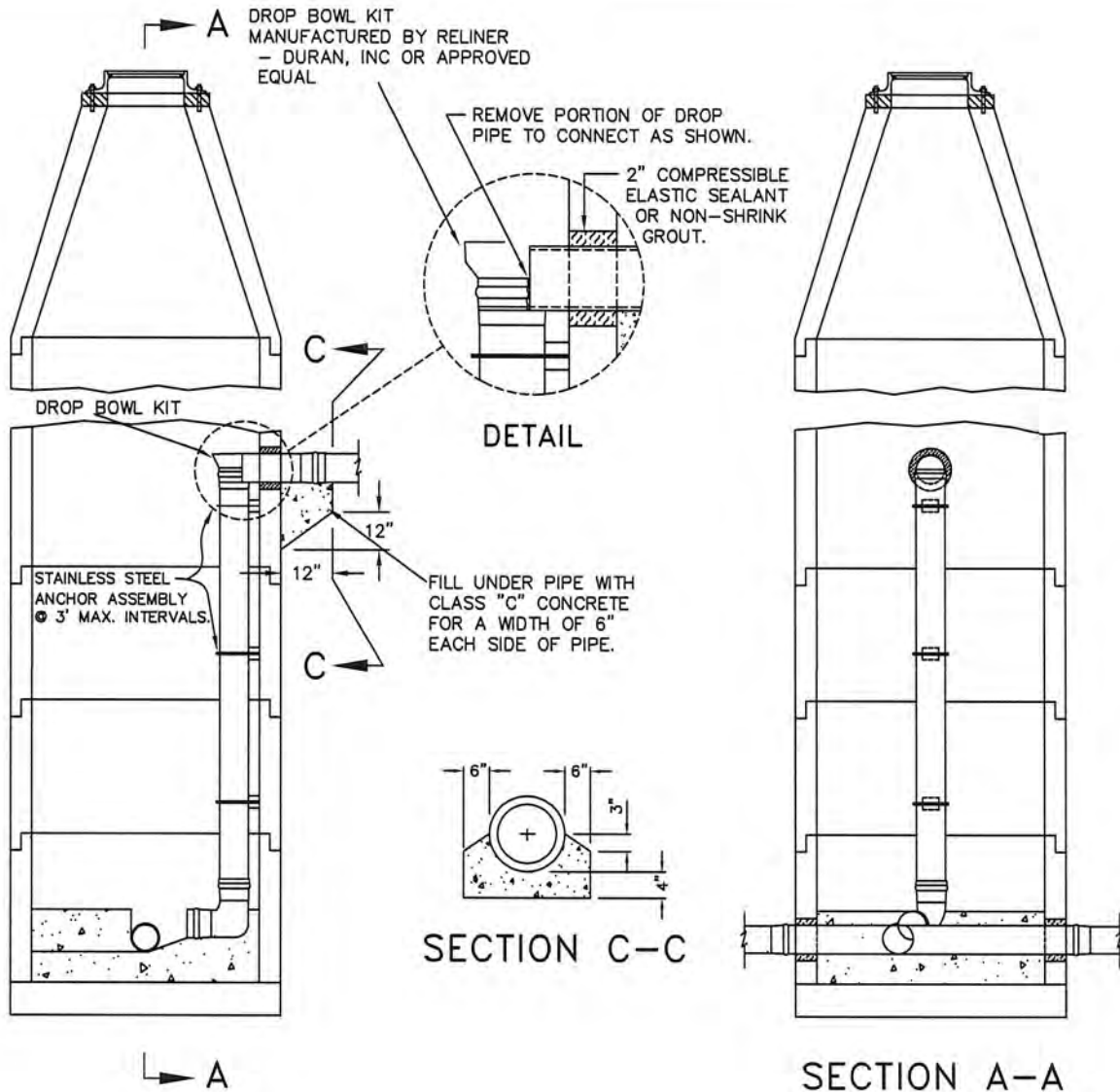


THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI

TYPICAL INSTALLATION OF BUILDING SEWER LATERAL

NO SCALE DATE: MAY 2016

APPROVED:
SEWERS CHIEF ENGINEER



NOTES:

INSIDE DROP MANHOLES SHALL ONLY
BE USED WHERE APPROVED BY M.S.D.
REMODEL BOTTOM OF EXISTING
MANHOLE IN THE DIRECTION OF FLOW.
ALL CONCRETE SHALL BE CLASS "C".

INSIDE DROP CONNECTIONS ON SANITARY SEWERS	
CONDUIT SIZE	STACK SIZE
8"	8"
12"	12"

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD
INSIDE DROP FOR
EXISTING MANHOLE

NO SCALE

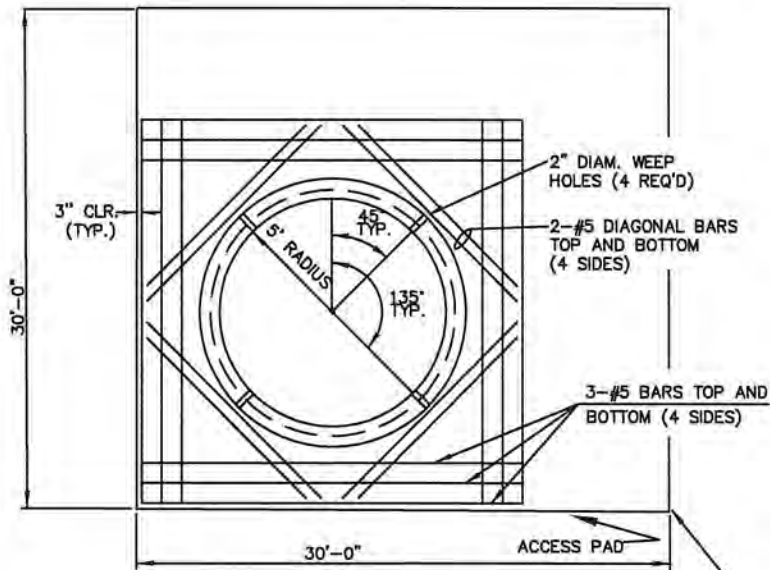
DATE: AUG., 2006

APPROVED:

[Signature]
SEWERS CHIEF ENGINEER

S.N.

ACC. NO. 49061

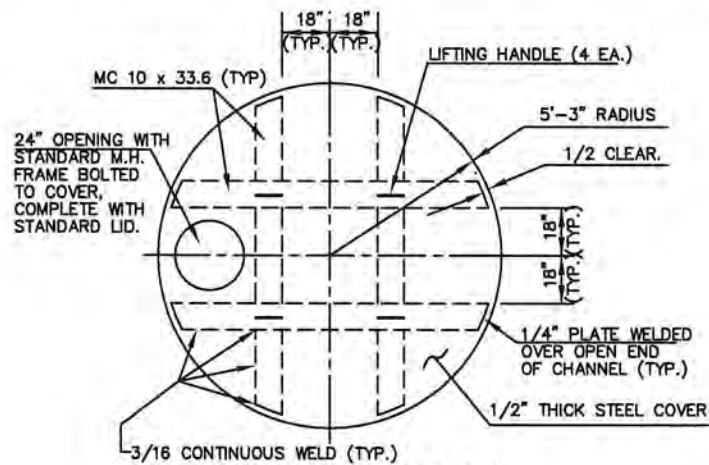


GRIT CHAMBER DRAINAGE & ACCESS PAD DETAIL

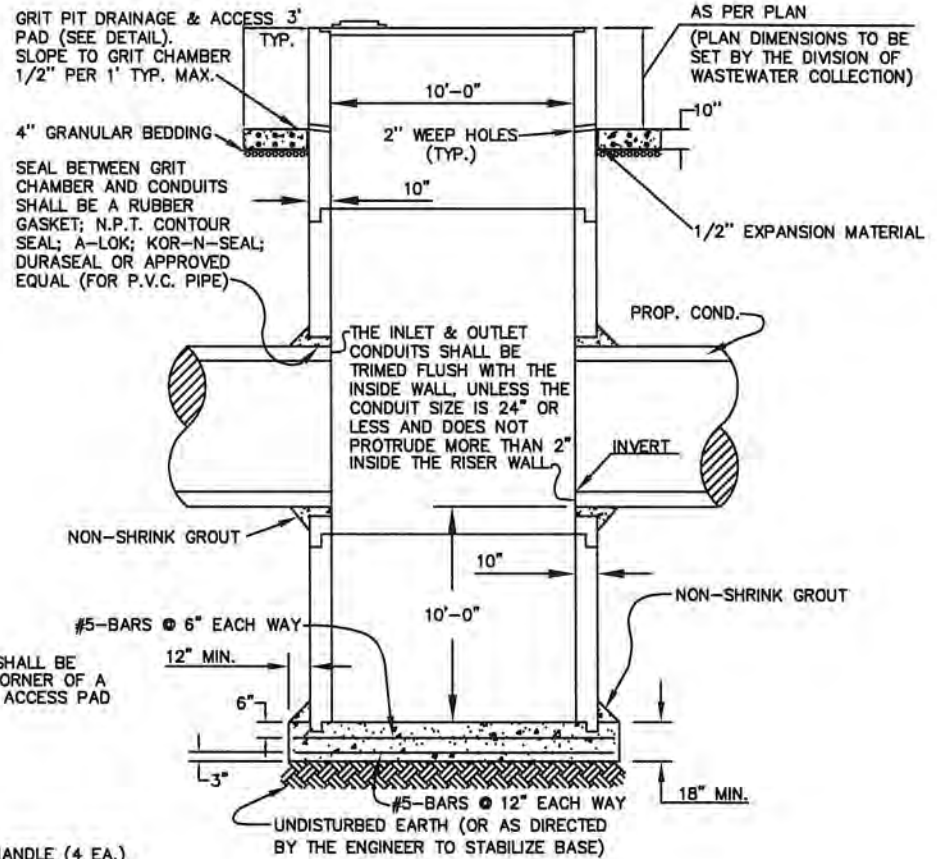
THE DRAINAGE PAD SHALL BE CONTAINED IN ONE CORNER OF A 30' x 30' CONCRETE ACCESS PAD

NOTES:

PROPOSED GRIT CHAMBER SHALL BE CONSTRUCTED USING 120" DIAMETER, 706.02, CL. III PIPE WITH 706.11 JOINTS.
ALL CONCRETE SHALL BE CLASS "C".



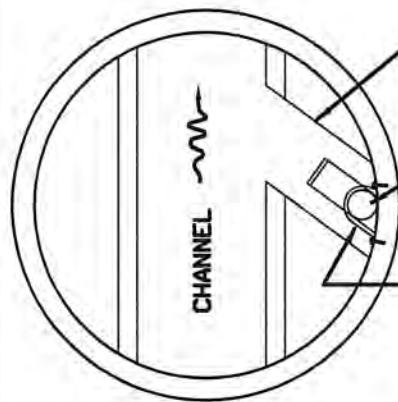
**COVER PLATE ASSEMBLY
TO BE SUPPLIED BY CONTRACTOR**



GRIT CHAMBER

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**STANDARD
GRIT
CHAMBER**

NO SCALE DATE: JAN. 2008
APPROVED: *Thomas A. Schuers*
INTERIM SEWERS CHIEF ENGINEER



SECTION A-A

FRAME & COVER

NOTES:

ALL FEATURES NOT NOTED, TO BE THE SAME AS SHOWN ON ACC. NO. 49037 FOR STANDARD TYPE 'S' MANHOLES.

LOW PRESSURE FORCE MAINS SHALL NOT DISCHARGE INTO HEAD END MANHOLES. THE DISCHARGE POINT SHALL BE LOCATED DOWNSTREAM OF A MINIMUM OF THREE ACTIVE BUILDING CONNECTIONS.

VENT RISER (1-2 FT.)

REMOVABLE MECHANICAL JOINT CAP

RUBBER GASKET

LOW PRESSURE SEWER SYSTEM

PVC CROSS

18" MAX.

18" MAX.

A

A

PVC STACK TO BE THE SAME SIZE AS THE FORCE MAIN

FASTEN STACK SECURELY TO MH. WALL WITH STAINLESS STEEL HARDWARE, MAX. 4' INTERVAL. STRAPS - 2" WIDE, 1/4" THICK STRAP BOLTS - 3/8" DIAM., 2 1/4" LONG (ANCHORS, PER SECTION A-A, MAY BE BULL DOG, RED HEAD, WEDGE IT OR QUICK BOLT.)

90° PVC TURN TO DIRECT FLOW DOWNSTREAM (CHANNEL BENCH IN DIRECTION OF FLOW)

UNDISTURBED EARTH

THE METROPOLITAN SEWER DISTRICT OF GREATER CINCINNATI

LOW PRESSURE FORCE MAIN TYPICAL RECEIVING MANHOLE

NO SCALE

DATE: AUGUST 1994

APPROVED:

Edward H. Kuttman

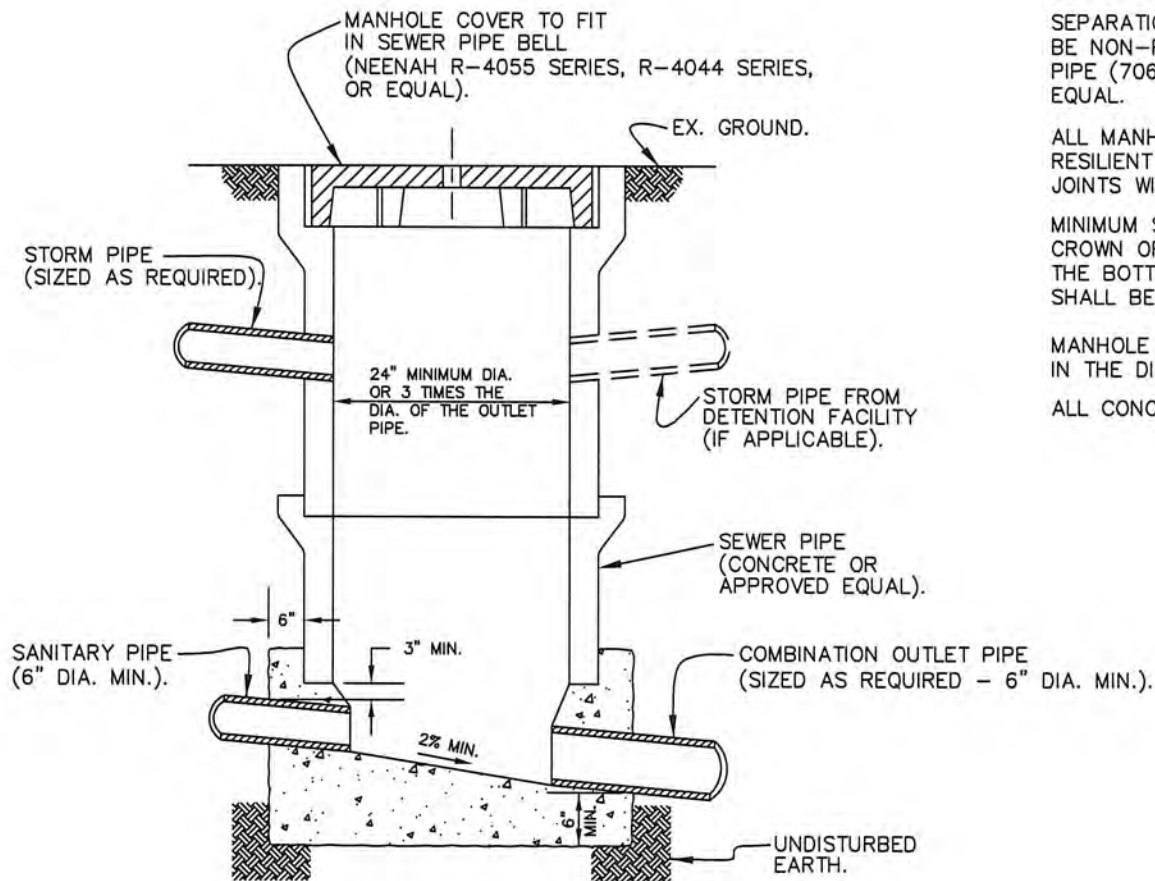
SEWERS CHIEF ENGINEER

TYP. RECEIVING MANHOLE

TRS

REV.
REV.

ACC. NO. 49063



NOTES:

SEPARATION MANHOLE SHALL BE LOCATED WITHIN 5 TO 10 FEET OF THE PROPERTY LINE.

SEPARATION MANHOLE PIPE SHALL BE NON-REINFORCED CONCRETE PIPE (706.01) OR AN APPROVED EQUAL.

ALL MANHOLE JOINTS SHALL BE RESILIENT AND FLEXIBLE GASKET JOINTS WITH BUTYL MASTIC SEALS.

MINIMUM SEPARATION BETWEEN THE CROWN OF THE SANITARY PIPE AND THE BOTTOM OF THE STORM PIPE SHALL BE 6".

MANHOLE BOTTOM SHALL BE CHANNELED IN THE DIRECTION OF THE FLOW.

ALL CONCRETE SHALL BE CLASS "C".

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD
SEPARATION MANHOLE

NO SCALE

DATE: AUG., 2006

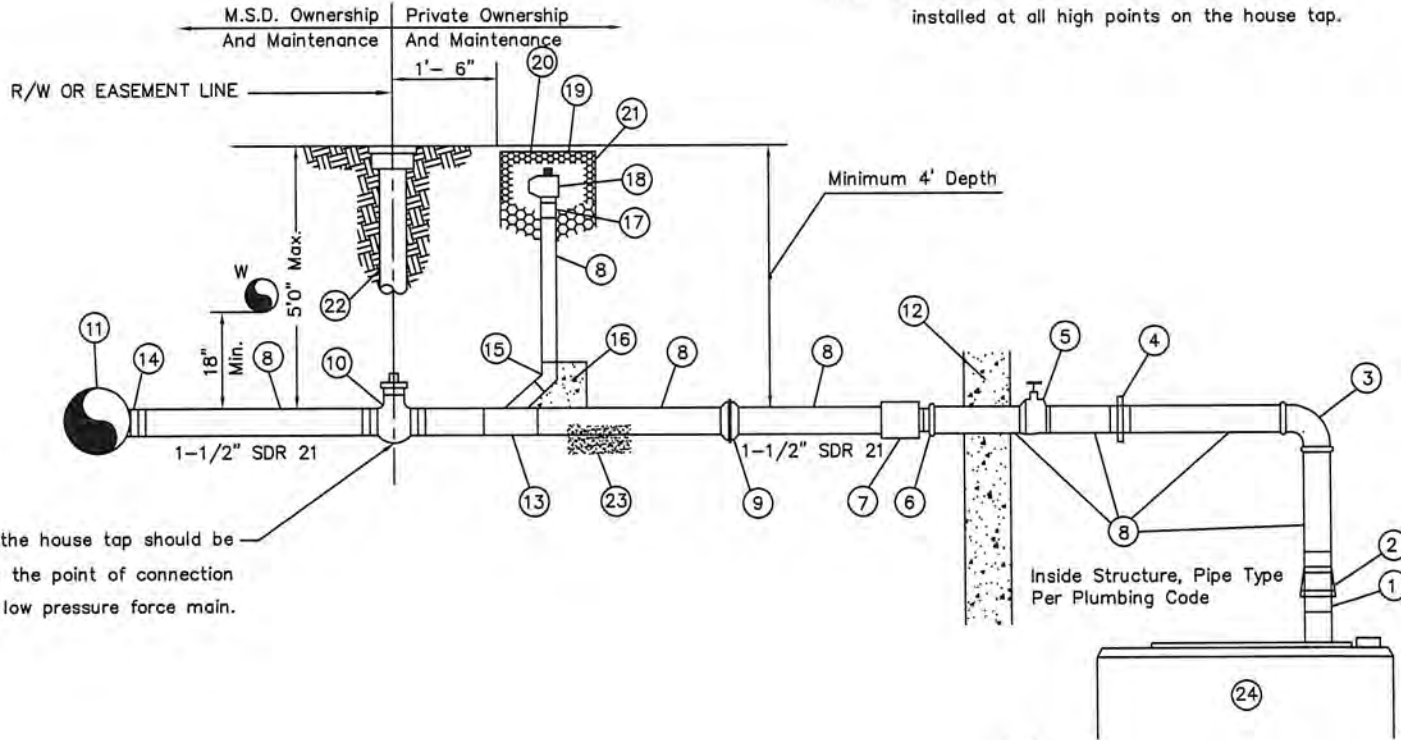
APPROVED:

[Signature]
SEWERS CHIEF ENGINEER

S.N.

ACC. NO. 49067

Note: It is recommended that air release valves be installed at all high points on the house tap.



This point of the house tap should be 6" lower than the point of connection to the public low pressure force main.

- | | | |
|--|--|---|
| ① Grinder Pump Discharge - 1 1/2" NPT | ⑫ Foundation Wall | ⑲ Insulation |
| ② Adapter - 1 1/2" FPT x 1 1/2" Sweat Copper | ⑬ 1 1/2" x 1 1/2" Wye PVC | ⑳ Cover - Concrete, Steel, etc.:
Weatherproof, Vandalproof |
| ③ Elbow 90° 1 1/2" Sweat Copper (NIBCO 607 or Equiv.) | ⑭ Wye 2" x 2" w/ 2" x 1 1/2" Adapter For Tap | ㉑ Meter Box |
| ④ Disconnect Joint - 1 1/2" Union or Compression Type Coupling | ⑮ Elbow - 45°, 1 1/2" PVC | ㉒ Stop Box - Ametek Roadway Valve Box or
approved equal. Lid shall be labeled "SEWER". |
| ⑤ Valve - 1 1/2" Fully Ported (Gate, Ball, Valve, etc.) | ⑯ Concrete Thrust Block | ㉓ Gravel Bedding |
| ⑥ Adapter - 1 1/2" NPT x Sweat Copper (NIBCO 604 or Equiv.) | ⑰ Threaded Adapter | ㉔ Grinder Pump |
| ⑦ Adapter - 1 1/2" FPT x 1 1/2" Socket PVC | ⑱ 1 1/2" Gate Valve - Wrench
Operated (Sears or Equal)
W/Threaded Flushing Adapter | |
| ⑧ Pipe - 1 1/2" PVC W/Gasket Joints (160 P.S.I. Minimum) | | |
| ⑨ Check Valve - 1 1/2" Fully Ported Swing Type | | |
| ⑩ Stop 1 1/2" NPT, Brass (N\A) | | |
| ⑪ Low Pressure Main | | |

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD BUILDING
CONNECTION TO A LOW
PRESSURE FORCE MAIN

NO SCALE DATE: AUG., 2006
APPROVED:  SEWER CHIEF ENGINEER

ACC. NO. 49069

STANDARD SYMBOLS

ITEM	SYMBOL
COUNTY LINE	----- (HAMILTON COUNTY) ----- (BUTLER COUNTY)
TOWNSHIP LINE	----- (MIAMI TOWNSHIP) ----- (GREEN TOWNSHIP)
CORPORATION LINE	----- (CITY OF CINCINNATI) ----- (COUNTY OF HAMILTON, AMBERLY VILLAGE, ETC.)
SECTION LINE	----- (SECTION 25) ----- (SECTION 24)
EXISTING FENCE LINE	X X EX. FENCE
EXISTING WALL	EX. WALL
EXISTING E.O.P. (CURB LINE)	CURB LINE
EXISTING WALK	EX. CONG. WALK
EXISTING DRIVE	-----
LIMITED ACCESS LINE	L/A
EXISTING R-O-W LINE	R/W
PROPERTY LINE	P
LIMITS OF CONSTRUCTION	LIMITS OF CONSTRUCTION
EX. RAILROAD	40 scale and larger Less than 40 scale
EXISTING CABLE TV LINE	C C C
EXISTING ELECTRIC LINE	E E E
EXISTING GAS LINE	EX. " G.M. G G G
EXISTING TELEPHONE LINE	T T T
EXISTING WATER LINE	EX. " W.M. W W W

THE METROPOLITAN SEWER DISTRICT
OF GREATER CINCINNATI

STANDARD SYMBOLS

NO SCALE

DATE: AUG., 2006

APPROVED: _____

SEWERS CHIEF ENGINEER

ACC. NO. 49072

STANDARD SYMBOLS

ITEM	SYMBOL
EXISTING GUARD RAIL	
EX. SEWER (24" AND LARGER)	
EX. SEWER (UP TO 24")	
PROP. SEWER (24" AND LARGER)	
PROP. SEWER (UP TO 24")	
PROP. SEWER (24" AND LARGER) IN SAME ALIGNMENT AS EXISTING	
PROP. SEWER (UP TO 24") IN SAME ALIGNMENT AS EXISTING	

ITEM	PLAN	PROFILE
CONCRETE ENCASEMENT		
TUNNEL OR PIPE JACKING		
JACK & BORE OR DIRECTIONAL DRILL		

ITEM	SYMBOL
EXISTING CONTOUR	
GROUND PROFILE	



THE METROPOLITAN SEWER DISTRICT
OF GREATER CINCINNATI

STANDARD SYMBOLS

NO SCALE

DATE: AUG., 2006

APPROVED:


SEWERS CHIEF ENGINEER

ACC. NO. 49073

STANDARD SYMBOLS

ITEM	SYMBOL	DWG
BAR SCALE		MSDSCALE
NORTH ARROW		MSDNARR
EXISTING BENCHMARK		MSDBM
PROPERTY LINE		MSDPL
COMMON PROPERTY LINE		MSDM_PL
LIMITED ACCESS R/W		MSDLA
RIGHT OF WAY		MSDRW
EXISTING SIGN		MSDEXSGN
EXISTING MAIL BOX		MSDMAILBOX
EXISTING MARSH		MSDMARSH
EXISTING FLOW ARROW		MSDEXARROW
PROPOSED FLOW ARROW		MSDPRARROW
TEST BORE		MSDTBOR
EXISTING FLAG POLE		MSDFPOLE
EXISTING LIGHT POLE		MSDLPOLE
EXISTING POWER POLE		MSDPPOLE
EXISTING GUY WIRE		MSDGUY
EXISTING TELEPHONE POLE		MSDTPOLE
EXISTING TELEPHONE MANHOLE		MSDTMH
















THE METROPOLITAN SEWER DISTRICT
OF GREATER CINCINNATI

STANDARD SYMBOLS

NO SCALE DATE: AUG., 2006
APPROVED:  SEWERS CHIEF ENGINEER

ACC. NO. 49074

STANDARD SYMBOLS

ITEM	SYMBOL	DWG
EXISTING COMBINATION INLET		MSDCOMBI
EXISTING CURB INLET		MSDCURBI
EXISTING CURB INLET MANHOLE		MSDCURBIMH
EXISTING DOUBLE DITCH INLET		MSDDDI
EXISTING DOUBLE GUTTER INLET		MSDDGI
EXISTING SINGLE DITCH INLET		MSDDSI
EXISTING SINGLE GUTTER INLET		MSDSGI
EXISTING YARD DRAIN		MSDYD
EXISTING GAS BOX	O.G.B.	MSDGB
EXISTING GAS VALVE	O.G.V.	MSDGV
EXISTING WATER BOX	O.W.B.	MSDWB
EXISTING WATER VALVE CHAMBER		MSDWCM
EXISTING WATER VALVE	O.W.V.	MSDWV
EXISTING FIRE HYDRANT		MSDEXFH
EXISTING MANHOLE		MSDEXMH
PROPOSED MANHOLE		MSDPRMH
PROPOSED MANHOLE OVER EXISTING MANHOLE		MSDPREX
EXISTING CLEAN-OUT		MSDECLOUT
PROPOSED CLEAN-OUT		MSDCLOUT

THE METROPOLITAN SEWER DISTRICT
OF GREATER CINCINNATI

STANDARD SYMBOLS

NO SCALE DATE: AUG., 2006
APPROVED:  SEWERS CHIEF ENGINEER

ACC. NO. 49075

STANDARD SYMBOLS

ITEM	SYMBOL	DWG
LABEL TREE SIZE AND DRAW TO SCALE WHEN APPLICABLE		
DECIDUOUS TREE 1" - 12"		tree1
DECIDUOUS TREE 13" - 20"		tree2
DECIDUOUS TREE 21" - 35"		tree3
DECIDUOUS TREE 36" AND UP		tree4
EVERGREEN TREE 1" - 12"		etree1
EVERGREEN TREE 13" - 20"		etree2
EVERGREEN TREE 21" - 35"		etree3
EVERGREEN TREE 36" AND UP		etree4

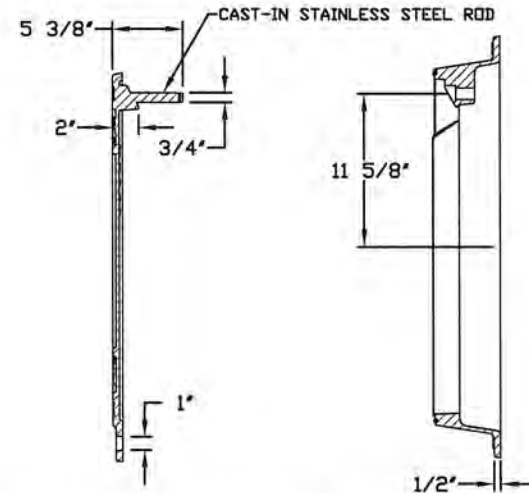
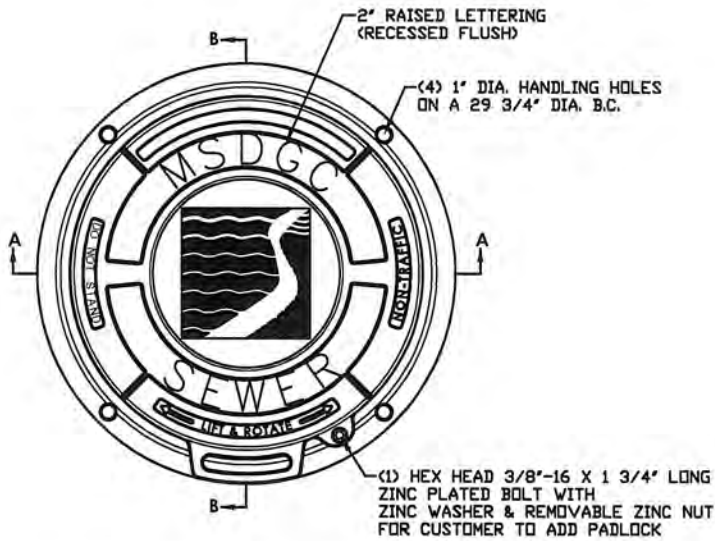
ITEM	SYMBOL
BUILDINGS	

ITEM	SYMBOL
STREAMS	

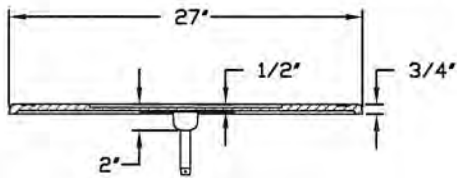
ITEM	SYMBOL
WOODED AREA	

THE METROPOLITAN SEWER DISTRICT
 OF GREATER CINCINNATI
STANDARD SYMBOLS
 NO SCALE DATE: AUG. 2006
 APPROVED: SEWERS CHIEF ENGINEER

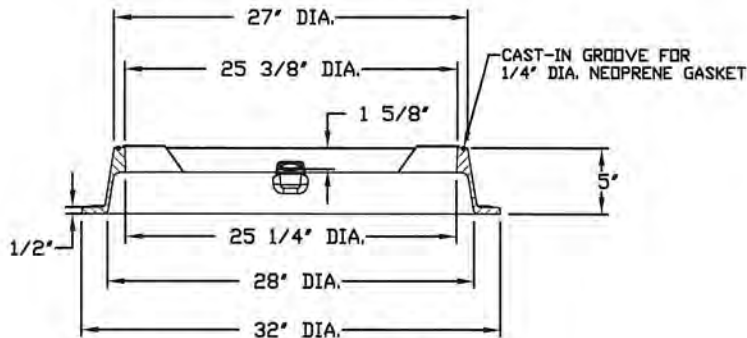
ACC. NO. 49076



COVER SECTION B-B FRAME SECTION B-B



COVER SECTION A-A



FRAME SECTION A-A

NOTES:

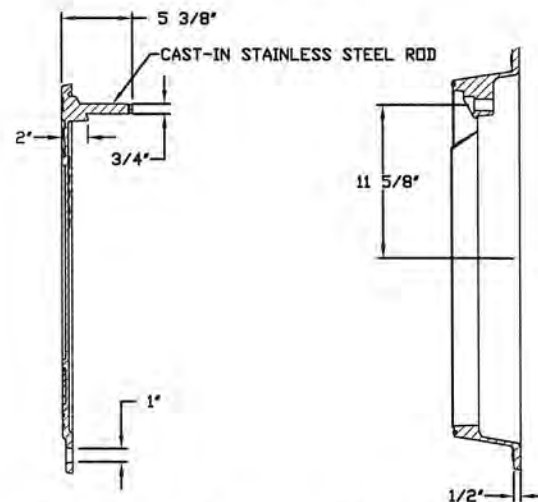
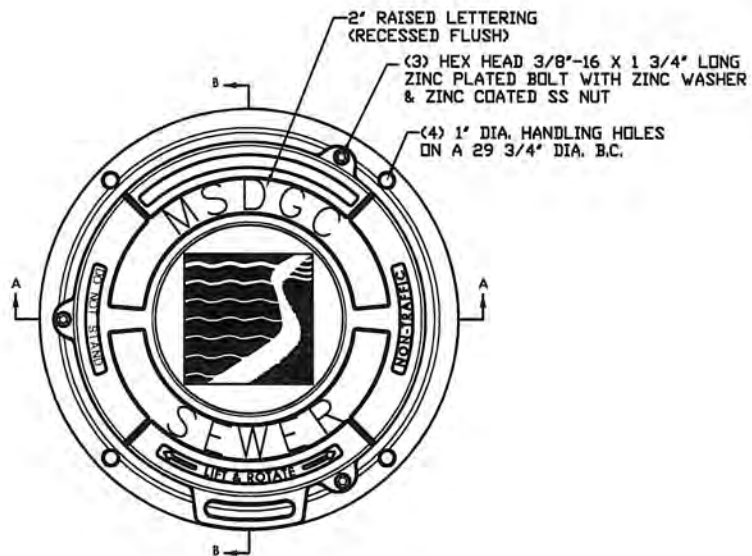
- THIS COVER SHALL ONLY BE USED WHERE SPECIFIED ON THE PLANS.
- NON-TRAFFIC USE ONLY.
- ESTIMATED WEIGHTS:
 - FRAME 85 LBS
 - COVER 60 LBS
 - TOTAL 145 LBS
- FRAME & COVER MATERIAL: CAST GRAY IRON ASTM A48, CLASS 35B
- SPEC. EAST JORDAN 104011R01 OR EQUAL. THERE IS NO GUARANTEE THAT AN EQUAL IS AVAILABLE.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD MANHOLE
COVER ON
ELEVATED CONES

NO SCALE DATE: MAY 2008
APPROVED: *Thomas W. Schwens*
INTERIM SEWERS CHIEF ENGINEER

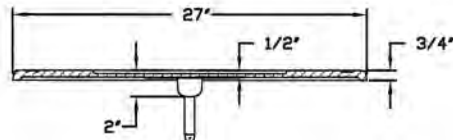
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ACC. NO. 60866



COVER SECTION B-B

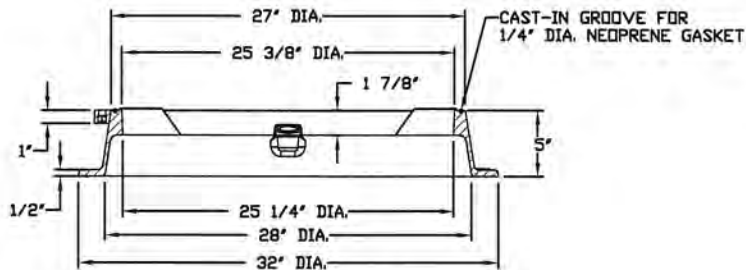
FRAME SECTION B-B



COVER SECTION A-A

NOTES:

- THIS COVER SHALL ONLY BE USED WHERE SPECIFIED ON THE PLANS.
- NON-TRAFFIC USE ONLY.
- ESTIMATED WEIGHTS:
 - FRAME 85 LBS
 - COVER 60 LBS
 - TOTAL 145 LBS
- FRAME & COVER MATERIAL: CAST GRAY IRON ASTM A48, CLASS 35B
- SPEC. EAST JORDAN 104010R01 OR EQUAL. THERE IS NO GUARANTEE THAT AN EQUAL IS AVAILABLE.

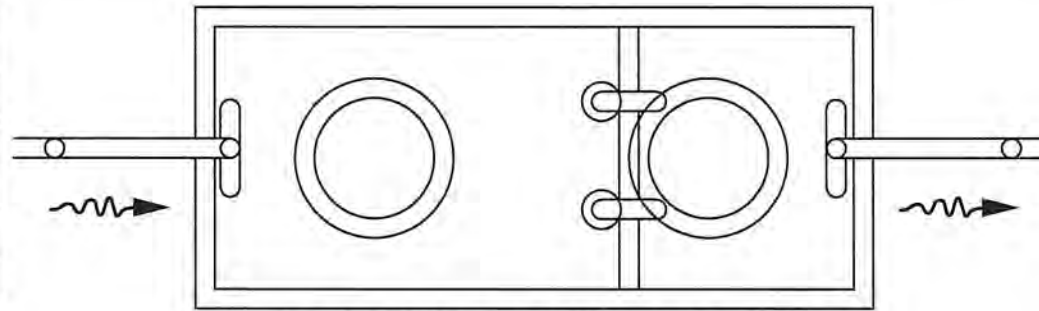


FRAME SECTION A-A

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**STANDARD WATERTIGHT
MANHOLE COVER ON
ELEVATED CONES**

NO SCALE DATE: MAY 2008
APPROVED: *Thomas J. Schwens*
INTERIM SEWERS CHIEF ENGINEER

DFUs	VOLUME IN GALLONS
8	500
35	1000
172	1500
216	2000
342	3000



MSD DOES NOT REQUIRE OR PREFER BOLT-DOWN LIDS.
MSD STANDARD MANHOLE COVER WITH
MSD LOGO PER ACC #49005
(TYP)

NOTES:
ALL CONCRETE IS MINIMUM 4500
PSI @ 28 DAYS REINFORCED WITH
6X6 (10GAX10GA) WELDED WIRE
MESH AND #3 REINFORCING BARS.

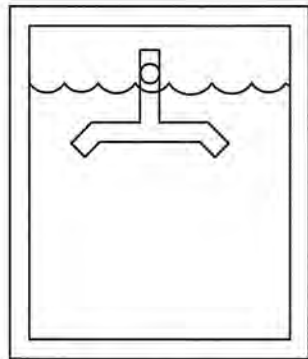
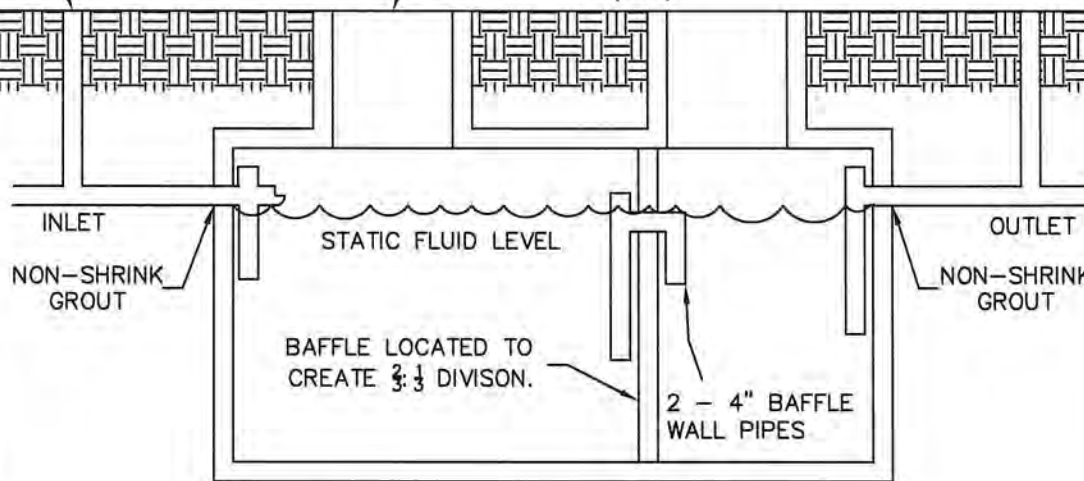
EXCAVATION FOR TANK MUST BE
COMPLETELY LEVEL AND FREE OF
ROCKS OR DEBRIS. PROVIDE 1-2
INCHES OF GRAVEL TO LEVEL THE
HOLE.

INLET & OUTLET OPENINGS ARE
PROVIDED WITH ADJUSTABLE SIZE
NEOPRENE GASKETS 3" - 4"
(POLYLOCK PIPE SEAL).

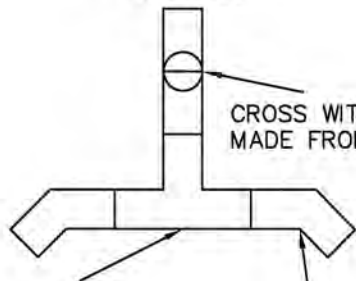
ALL INTERNAL PIPING IS 4".

TWO WAY CLEANOUT
(TYP)

GROUND



DOUBLE SWEEP
INLET TEE.

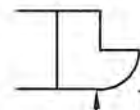


CROSS WITH OVERFLOW
MADE FROM HALF-CUT END CAP.

45° BEND. ANGLE TOWARDS
BOTTOM CORNERS.

TEE (DUAL SWEEP).
POSITION 14" - 18"
BELOW STATIC FLUID LEVEL.

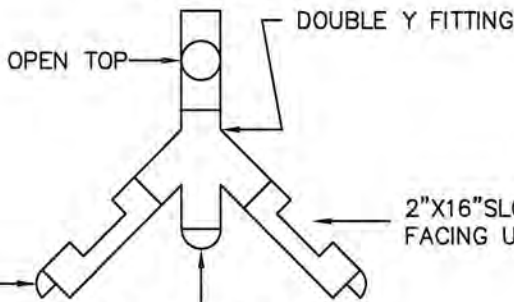
RMK



TEE WITH OPEN TOP

HALF-CUT END CAP

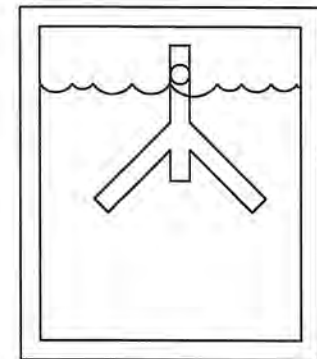
OUTLET TEE



DOUBLE Y FITTING

2"X16" SLOT
FACING UP.

EXTENDS TO POINT
50% OF DISTANCE
BETWEEN STATIC
FLUID LEVEL
AND BOTTOM.



OUTLET TEE AND
SAMPLE COLLECTION.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**STANDARD
GREASE INTERCEPTOR**

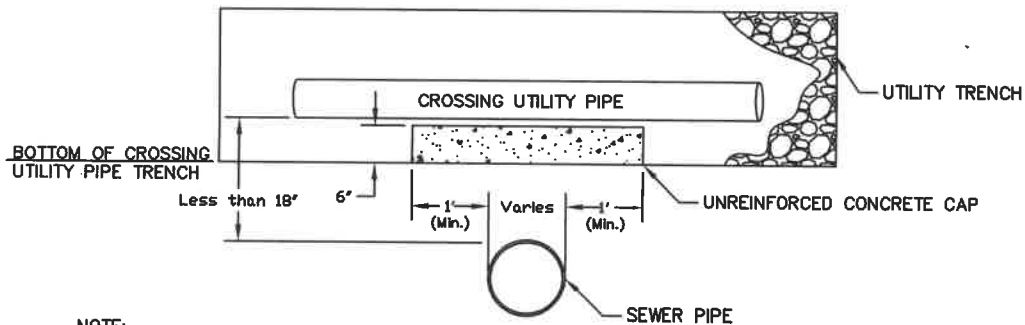
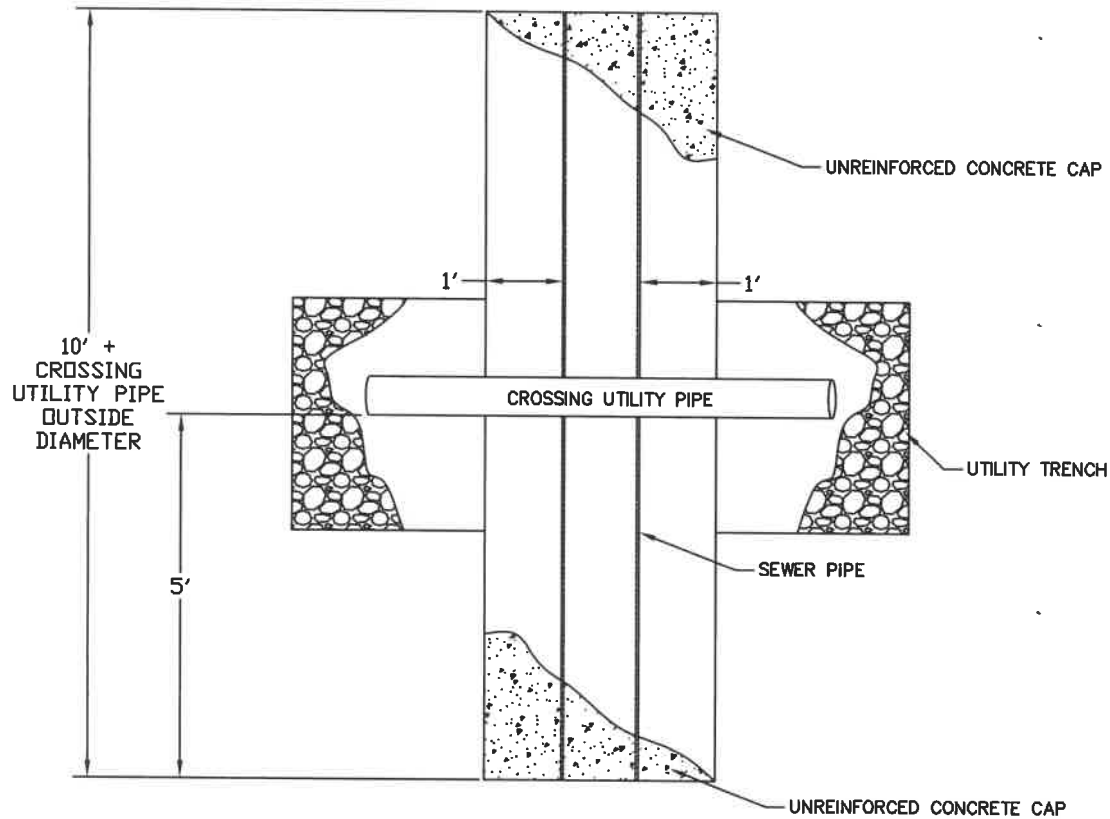
NO SCALE

APPROVED:

INTERIM

DATE: MAY 2008
Thomas H. Scherers
SEWERS CHIEF ENGINEER

ACC. NO. 60870



NOTE:

- UNREINFORCED CONCRETE CAP IS TO BE SIZED BASED ON THE FOLLOWING DIMENSIONS:
- 6" THICK
 - LENGTH VARIES BASED ON DIA. OF CROSSING UTILITY PIPE (5' FROM THE OUTSIDE EDGE OF THE CROSSING UTILITY PIPE IN BOTH DIRECTIONS)
 - SEWER DIAMETER + 2' WIDE (EXTENDS 1' IN EITHER DIRECTION OVER THE SEWER PIPE); 3' MINIMUM

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**UNREINFORCED
CONCRETE CAP**

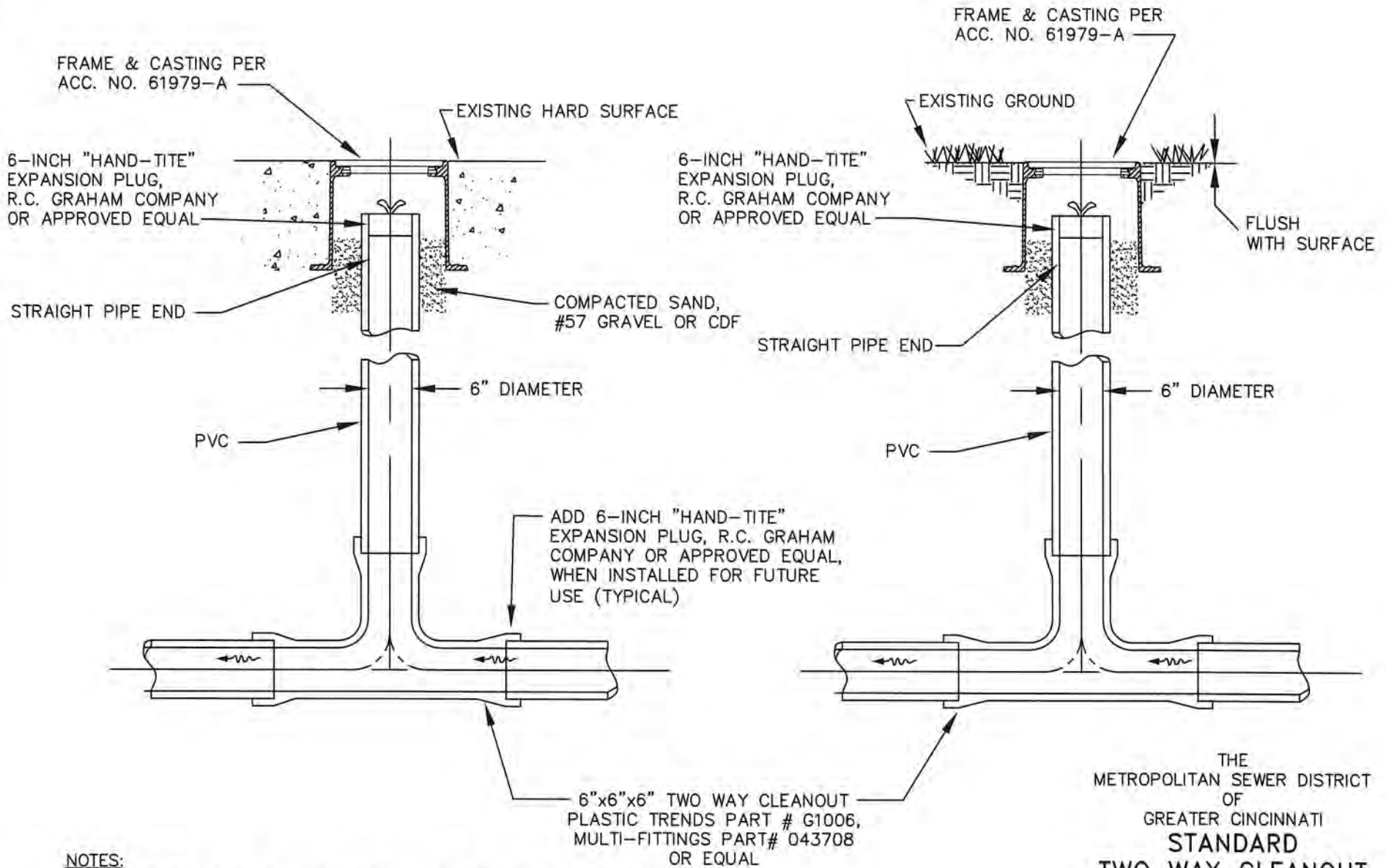
NO SCALE

DATE: OCT. 2023

APPROVED: *Nya Webb*
SEWERS CHIEF ENGINEER

M.C.

ACC. NO. 61307



NOTES:

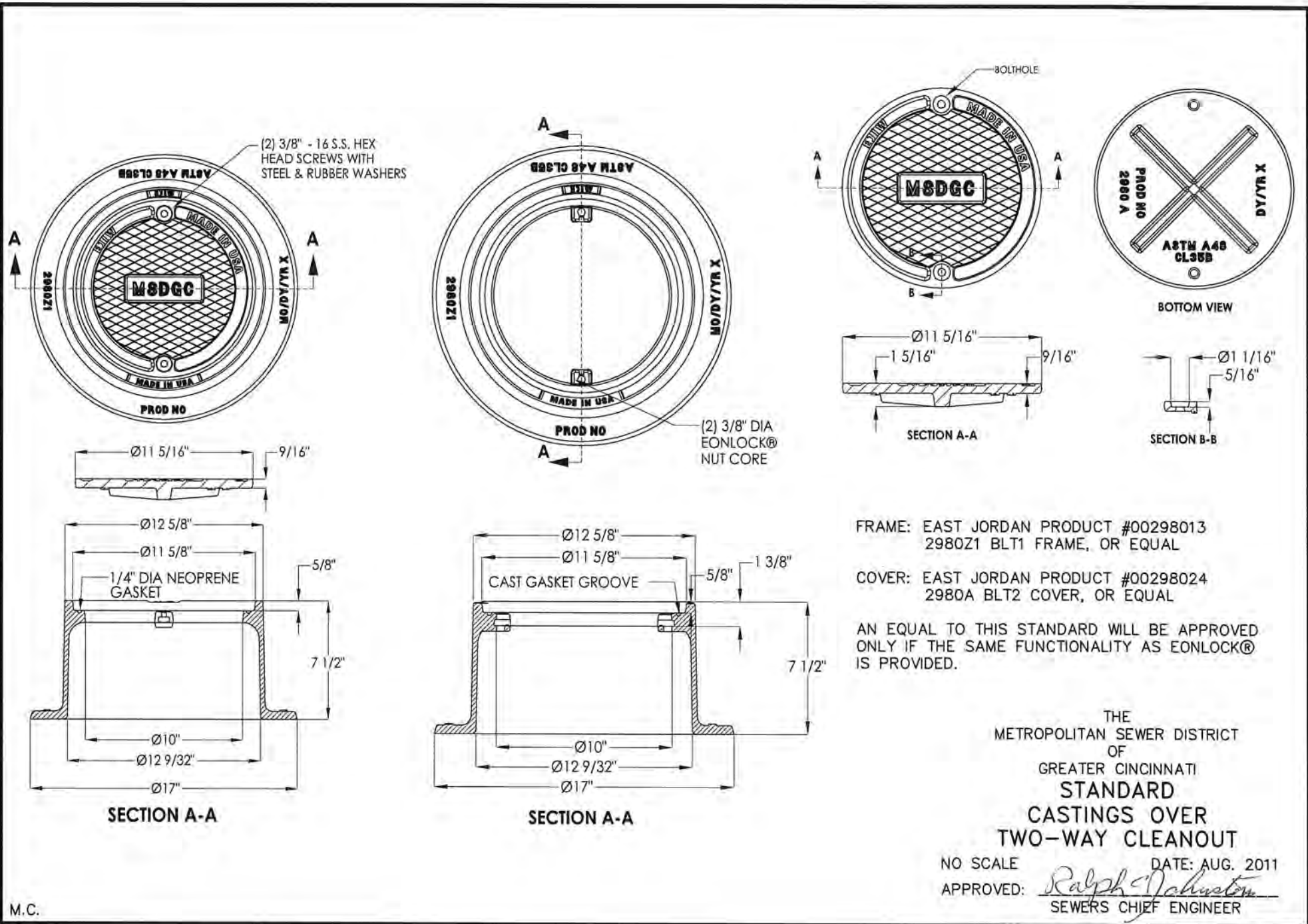
ALL JOINTS SHALL BE FLEXIBLE ELASTOMERIC SEALS, ASTM D-3212
 CLEANOUTS SHALL BE PLACED EVERY 200 FEET, AND AT BENDS 45° OR GREATER

THE
 METROPOLITAN SEWER DISTRICT
 OF
 GREATER CINCINNATI
STANDARD
TWO WAY CLEANOUT
FOR BUILDING SEWERS

NO SCALE DATE: AUG. 2011
 APPROVED: *Ralph J. Horstene*
 SEWERS CHIEF ENGINEER

M.C.

ACC. NO. 61979



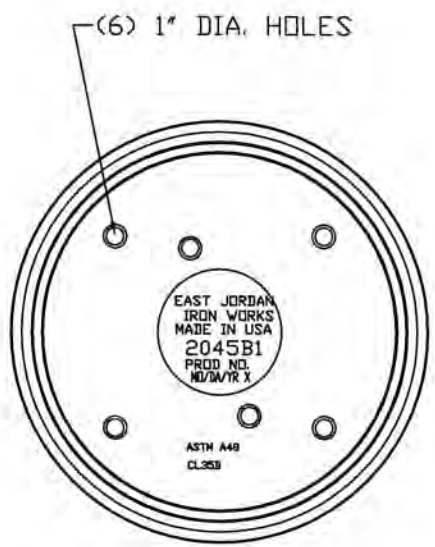
FRAME: EAST JORDAN PRODUCT #00298013
2980Z1 BLT1 FRAME, OR EQUAL

COVER: EAST JORDAN PRODUCT #00298024
2980A BLT2 COVER, OR EQUAL

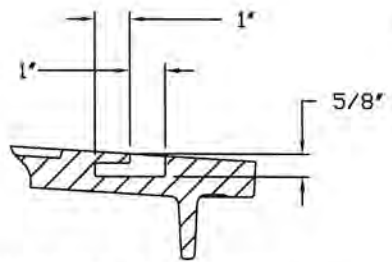
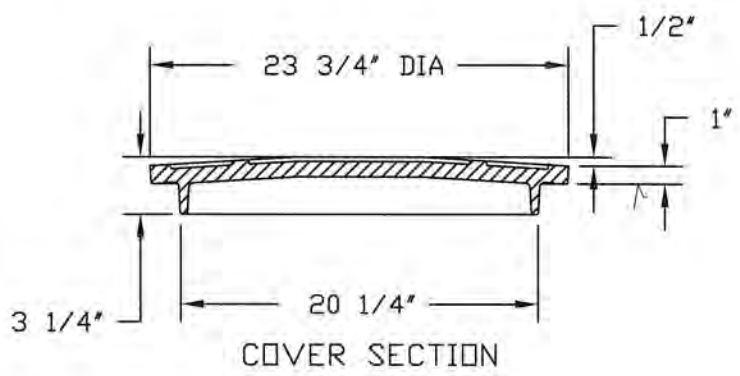
AN EQUAL TO THIS STANDARD WILL BE APPROVED
ONLY IF THE SAME FUNCTIONALITY AS EONLOCK®
IS PROVIDED.

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD
CASTINGS OVER
TWO-WAY CLEANOUT

NO SCALE DATE: AUG. 2011
APPROVED: *Ralph Johnston*
SEWERS CHIEF ENGINEER



BOTTOM VIEW



PICKHOLE DETAIL

THIS LID SHALL BE USED ON PRIVATE SEWERS ONLY. USE ACC. NO. 61980-A WHEN WATERTIGHT LID IS NECESSARY.

FRAME SHALL BE PER ACC. NO. 49005.

LID: EAST JORDAN PRODUCT #00204527 2045B1 COVER, OR APPROVED EQUAL

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
STANDARD LID
ON PRIVATE SEWERS

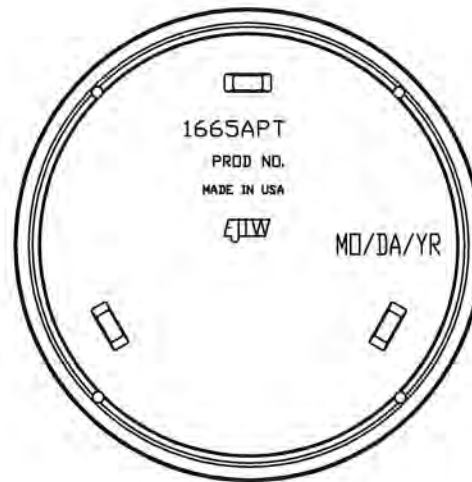
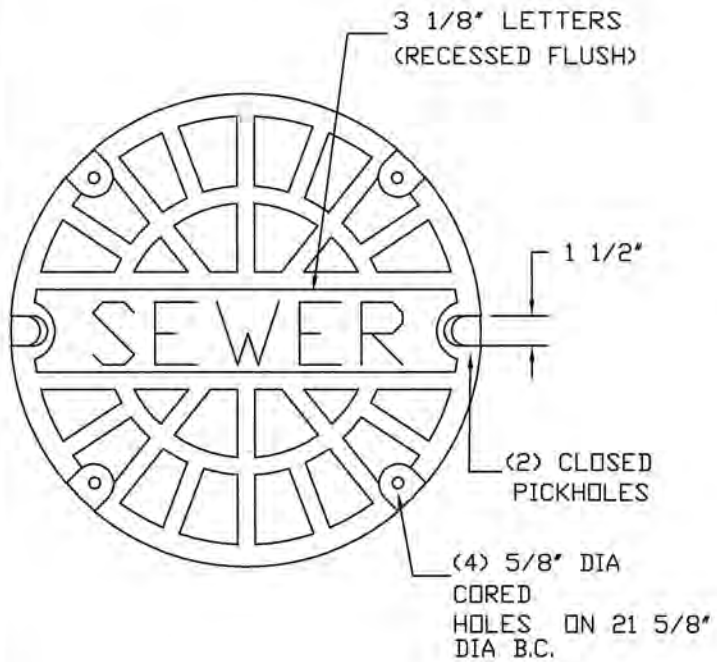
NO SCALE

DATE: AUG. 2011

APPROVED: *Ralph Johnston*
SEWERS CHIEF ENGINEER

M.C.

ACC. NO. 61980

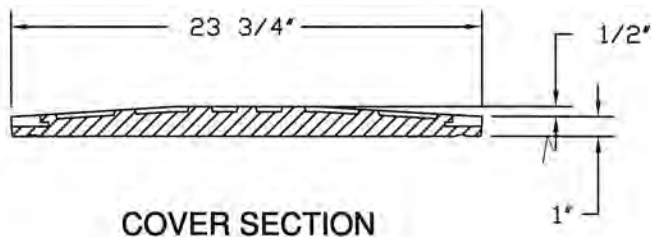


BOTTOM VIEW

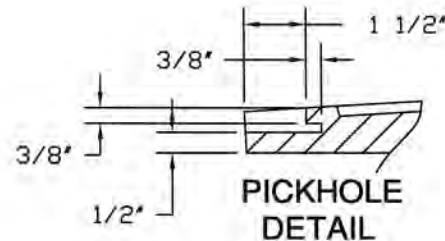
THIS LID SHALL BE USED ON PRIVATE SEWERS
WHEN A WATERTIGHT LID IS REQUIRED.

FRAME SHALL BE PER ACC. NO. 49005.

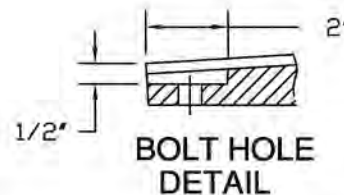
LID: EAST JORDAN PRODUCT #00166525
1665APT COVER, OR APPROVED EQUAL



COVER SECTION



**PICKHOLE
DETAIL**



**BOLT HOLE
DETAIL**

THE
METROPOLITAN SEWER DISTRICT
OF
GREATER CINCINNATI
**STANDARD WATERTIGHT
LID ON PRIVATE SEWERS**

NO SCALE

DATE: AUG. 2011

APPROVED: *Robert C. Johnston*
SEWERS CHIEF ENGINEER