MANHOLE DETAILS
NOTES

MANHOLE CASTINGS SHALL BE HEAVY DUTY, SUITABLE FOR H-20 HIGHWAY TRAFFIC LOADINGS.

MANHOLE FRAMES AND COVERS SHALL HAVE MACHINED BEARING SURFACES.


MANHOLE CASTINGS SHALL BE DIPPED TWICE IN BLACK ASPHALT PAINT.

BOLTED, LOCKING, SELF SEALING OR LIDS WITH HOLES IF REQUIRED WILL BE DESCRIBED IN THE SPECIFICATIONS AND DETAILED ON THE PLANS.

**"F" MAY BE REDUCED TO 7" FOR CASTINGS NOT IN PAVEMENT.

APPROVED CASTINGS

A. OHIO FOUNDRY INC. (FORMERLY THE EAST AKRON CASTING CO.)
   1. FRAME NO. 100; LID NO. 102.
   2. FRAME NO. 470; LID NO. 471.

B. NEENAH FOUNDRY COMPANY
   1. R-1040 WITH TYPE "A" LID.
   2. R-1050 WITH TYPE "A" LID.
   3. R-1669A WITH TYPE "A" LID.

C. EAST JORDAN IRON WORKS, INC.
   1. NO. 1058  4. NO. 2015
   2. NO. 1260  5. NO. 2020
   3. NO. 1450  1" HOLES ONLY

CITY OF KENT, OHIO
DEPARTMENT OF PUBLIC SERVICE
ENGINEERING DIVISION

CONSTRUCTION STANDARDS

MANHOLE FRAME & COVER DETAILS

DATE: 3/6/89 BY: CMW NO. MH-1
CITY ENGINEER: [Signature]
FOR MANHOLE FRAME AND LID DETAILS SEE SHEET MH-1.

NEW SURFACE

NEW LEVEL COURSE

ORIGINAL PAVEMENT

MANHOLE CASTING

12"

ONE COURSE BRICK OR MORTAR AS REQUIRED TO RAISE MANHOLE CASTING.

CLASS 'C' CONCRETE

MANHOLE

CITY OF KENT, OHIO
DEPARTMENT OF PUBLIC SERVICE
ENGINEERING DIVISION

CONSTRUCTION STANDARDS
DETAIL FOR RAISING OF MANHOLE COVER FOR PAVING OR RESURFACING PROJECTS

DATE 12/86 BY CLW NO. MH-2
CITY ENGINEER
MANHOLE BASES ON SEWERS 42" AND UNDER

REINFORCING STEEL LIST

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<th>BAR SIZES FOR SEWERS</th>
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<td>A</td>
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OPENINGS FOR THE 42" AND UNDER INLET AND OUTLET SEWER PIPES SHALL BE PREFABRICATED IN THE RISER SECTION UNLESS THE MANHOLE BASE IS BUILT TO AN ELEVATION 2' ABOVE THE TOP OF THE INLET & OUTLET PIPES.

CONCRETE FOR THE BASES MAY BE CLASS C OR MEET THE REQUIREMENTS OF O.O.T. 706.13. THE BASES MAY BE PRECAST OR CAST IN PLACE. IF PRECAST, THE BASE ON SEWERS 42" AND UNDER SHALL HAVE SUFFICIENT STEEL REINFORCEMENT TO PERMIT SHIPPING AND PLACEMENT WITHOUT DAMAGE TO THE BASE. THE BASE ON SEWERS 48" AND OVER SHALL BE REINFORCED AS SHOWN.

CITY OF KENT, OHIO
DEPARTMENT OF PUBLIC SERVICE
ENGINEERING DIVISION

CONSTRUCTION STANDARDS

STANDARD No.5 MANHOLE

DATE 3/6/89 BY GLW, NO. MH-4
CITY ENGINEER T. W. Fendall
PERMISSIBLE CONST. JOINT WITH C443 WATERTIGHT SEAL.

REINFORCED CONCRETE ENCASEMENT FORMED INTEGRAL WITH NEW MH OR STRUCTURAL TIE TO EXISTING MH. TIE TO MH SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE ENGINEER. REINFORCING SHALL BE No 4 REBAR CAGE W No 4 REBAR STIRRUPS AT 12" c/c AND 4-No 4 VERT REBAR.

SEE MH-6 FOR STANDARD MANHOLE DETAILS
PRECAST M.H. OPENING W/ FLEXIBLE WATERTIGHT CONNECTION (TYP.)

R1 = A - PIPE 0
2
R2 = A + PIPE 0
2

TYPICAL EACH LINE 2'-0" LENGTH TO FIRST JOINT (RIGID PIPE)

M.H. FRAME & COVER (SEE NOTE 6) ON SHEET MH-7

FULL MORTAR BED
8" CONCRETE DUGHOUT FOR ADJUSTING CASTING WITH FULL MORTAR JOINT

JOINT PER ASTM C-443 WITH JOINT SEALANT

PRECAST CONCRETE MH PER ASTM C-478

REMOVABLE WATERTIGHT PLUG

CITY OF KENT, OHIO
DEPARTMENT OF PUBLIC SERVICE
ENGINEERING DIVISION

CONSTRUCTION DETAILS

STANDARD SANITARY MANHOLE

DATE 09/16/93 BY INT NO. MH-6
CITY ENGINEER
STANDARD NOTES

1. MANHOLES SHALL BE WATERTIGHT. NO VISIBLE INFILTRATION OR INFLOW SHALL BE ALLOWED.

2. ALL NEW MANHOLES SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 WITH O-RING JOINTS CONFORMING TO ASTM C-443. ALL JOINTS SHALL BE SEALED WITH TWO (2) COATS (ONE EACH JOINING END) OF BITUMINOUS JOINT FILLER MATERIAL CONFORMING TO ODOT ITEM 706.10 IN ADDITION TO THE O-RING GASKET.

3. CHANNEL INVERTS SHALL BE SMOOTH, FORMED TO DIRECT FLOW, AND PROVIDE A MINIMUM FULL 1/2 PIPE CROSS SECTION OR AS OTHERWISE SHOWN. BENCHES SHALL HAVE A MINIMUM 1/2 INCH PER FOOT SLOPE. ALL CONCRETE SHALL BE CLASS "C" (4,000 PSI AT 28 DAYS, ODOT ITEM 511). PIPES OVER EIGHT INCH (8") IN DIAMETER SHALL HAVE THE TOP OF THE CHANNEL MATCH THE CROWN OF THE PIPE.

4. NO BRICK SHALL BE ALLOWED IN NEW MANHOLE CONSTRUCTION UNLESS APPROVED BY THE ENGINEER. FIREBRICK BRICK IS APPROVED FOR REPAIRS TO EXISTING BRICK MANHOLES.

5. ALL NEW MANHOLES SHALL BE PROVIDED WITH A FLEXIBLE NEOPRENE OR OTHER APPROVED ENTRY GASKET. ANY SUCH GASKET SHALL BE INTEGRAL WITH THE MANHOLE WALL. A PIPE JOINT SHALL BE PROVIDED AT A POINT TWO FEET (2') +/- SIX INCHES (6") PAST THE MANHOLE FOUNDATION BASE.

6. THE MANHOLE CASTING FRAME AND LID SHALL AS SHOWN ON THE STANDARD MANHOLE FRAME AND LID DETAIL. WHEN SHOWN ON THE DRAWINGS LIDS SHALL BE BOLTED DOWN WITH A MINIMUM FOUR 5/16 INCH COUNTERSUNK S.S. MACHINE BOLTS. VENTED LIDS WITH MAXIMUM 3/4 INCH HOLES SHALL ONLY BE PROVIDED WHERE SPECIFICALLY SHOWN ON THE DRAWING.

7. MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE USING A MAXIMUM OF TWELVE INCHES (12") OF CONCRETE DOUGHNUTS (MINIMUM EIGHT INCH [8"] THICKNESS AND DEPTH AS REQUIRED. ALL JOINTS AND CASTINGS SHALL HAVE A FULL MORTAR BED MIXTURE OF TWO [2] PARTS SAND, ONE [1] PART PORTLAND CEMENT, MAXIMUM ONE PERCENT (1%) CALCIUM, NO LIME AND MOISTURE CURED FOR FORTY-EIGHT (48) HOURS.

8. UNLESS SEPARATE PAY ITEMS ARE PROVIDED, ALL PROTECTION AND SUPPORT OF EXISTING UTILITIES AND STRUCTURES AND PROTECTION AND/OR RESTORATION OF ALL SURFACES INCLUDING PAVEMENT, DRIVES, CURBS, SIDEWALKS, GRASS, AND ANY OTHER SURFACES SHALL BE INCLUDED IN THE UNIT PRICES BID FOR ALL SEWER
STANDARD NOTES CONT.

ITEMS. RESTORATION SHALL BE IN ACCORDANCE WITH THE
SPECIFICATIONS, SECTIONS PROVIDED ON THE DRAWINGS OR THE STANDARD
CONSTRUCTION DRAWING, IN ACCORDANCE WITH ANY ROAD PERMITS, OR, IF
NOT SHOWN OR SPECIFIED, SHALL BE REPLACED IN KIND WITH THE
EXISTING ITEM THICKNESS AND MATERIAL REMOVED. INCLUDED ARE ALL
EQUIPMENT, LABOR, AND MATERIALS NECESSARY FOR EXCAVATION, STONE
FOUNDATION, BEDDING BACKFILL, GRANULAR BACKFILL, SHEETING,
SHORING, BRACING, DEWATERING, COMPACTION OF ANY AND ALL
MATERIALS, TOPSOILING, SEEDING, AGGREGATE, AND OTHER BASE
MATERIALS, PAVEMENTS, SEALING OR JOINTS, CURBS, SIDEWALKS, AND
RESTORATION OF ALL STRUCTURES AND SURFACES DISTURBED.

9. MANHOLE STEPS SHALL BE ODOT 711.31 REINFORCED PROPYLENE PLASTIC
   WITH A 12" MINIMUM WIDTH OF TREAD.

10. WHEN MANHOLE DEPTH EXCEEDS TWENTY FEET (20’) THE BASE SLAB
    THICKNESS SHALL BE INCREASED TO TWELVE INCHES (12”).

11. MAXIMUM LENGTH OF FIRST SEWER PIPE LENGTHS IN AND OUT OF MANHOLE
    SHALL BE TWO FEET (2’-0”).
MANHOLE FRAME & COVER SEE NOTE 6 ON SHEET MH-7.

ADJUSTING COLLARS NOT TO EXCEED 12" IN HEIGHT. PLASTER INSIDE AND OUT W/ 1/2" CEMENT MORTAR. RED SHALE BRICK ONLY.

PRECAST FLAT TOP SLAB - ECCENTRIC SECTION MAY BE USED IF MORE THAN ONE RISER SECTION ABOVE INTERMEDIATE SLAB PLATFORM IS REQUIRED.

O-RING JOINTS (TYP)

PRECAST CONCRETE SHALL BE REINFORCED IN ACCORDANCE WITH THE LATEST A.S.T.M. DESIGNATION C-478-84-T AND REVISIONS THERETO. ALL PRECAST CONC. SECTIONS SHALL BE MANUFACTURED AND FURNISHED AS SOLID SECTION WITHOUT LIFT HOLES OF ANY KIND.

PRECAST RISER SECTION WITH SHOP POURED 6' INTERMEDIATE SLAB PLATFORM AND 1/2 I.D. OF MANHOLE OPENING. (SEE DETAIL BELOW)

THROSEAL INSIDE OF MANHOLE FULL DEPTH. (ANY COLOR EXCEPT GRAY) ALL JOINTS AND CONNECTIONS TO BE WATER PLUGGED.

FLEXIBLE GASKET (A.S.T.M. C-923) CAST INTEGRAL WITH CONCRETE WALL.

CLASS "C" CONCRETE FILL

4000 R.S.I. CONCRETE PRECAST BOTTOM INTEGRAL WITH BASE SECTION MAY BE USED.

NOTE: MAXIMUM LENGTH OF FIRST SEWER PIPE LENGTHS IN 8" OUT OF MANHOLE SHALL BE 2'-0".

PROVIDE 8" BASE SLAB W/#4 @ 12" C-C EACH WAY; WHEN MANHOLE DEPTH EXCEEDS 20' THE BASE SLAB THICKNESS SHALL BE INCREASED TO 12"
MANHOLE FRAME & COVER SEE NOTE 6 ON SHEET MH-7.

ONE COURSE ADJUSTING BRICK MAX. (RED BRICK ONLY).

PRECAST FLAT TOP SLAB - EDECENTRIC SECTION MAY BE USED IF MORE THAN ONE RISER SECTION ABOVE PLATFOM IS REQUIRED.

O-RING JOINTS (TYP.)

PRECAST CONCRETE SHALL BE REINFORCED IN ACCORDANCE WITH LATEST A.S.T.M. DESIGNATION C-476-64-T AND REVISIONS THERETO. ALL PRECAST CONCRETE SECTIONS SHALL BE MANUFACTURED AND FURNISHED AS SOLID SECTION WITHOUT LIFT HOLES OF ANY KIND.

FIELD CONDITIONS MAY WARRANT MODIFICATIONS OF THIS STRUCTURE (WRITTEN APPROVAL REQ).

FLEXIBLE GASKET (A.S.T.M. C-923) AT M.H. WALLS (CAST INTEGRAL WITH MANHOLE WALL).

THOROSEAL INSIDE OF MANHOLE FULL DEPTH (ANY COLOR EXCEPT GRAY). ALL JOINTS AND CONNECTIONS TO BE WATER PLUGGED.

4000 R.S.I. CONCRETE PRECAST BOTTOM INTEGRAL WITH BASE SECTION MAY BE USED.

NOTE: MAXIMUM LENGTH OF FIRST SEWER PIPE LENGTHS IN & OUT OF MANHOLE SHALL BE 2'-0".

CONCRETE PLATFORM 4000 R.S.I. (SEE DETAIL BELOW)

PROVIDE 8" BASE WITH #4 @ 12' C-C EACH WAY

CONCRETE PLATFORM DETAIL

CITY OF KENT, OHIO
DEPARTMENT OF PUBLIC SERVICE
ENGINEERING DIVISION

CONSTRUCTION STANDARDS

SAMPLING AND METERING MANHOLE DETAIL (SHALLOW MANHOLE - 9'-0" OR LESS)

DATE 1/27/86 BY CLW NO. MH-10

CITY ENGINEER
1. **Manholes Shall Be Watertight.** No visible infiltration or inflow shall be allowed.

2. All new manholes shall be precast concrete conforming to ASTM C-473 with O-ring joints conforming to ASTM C-443. All joints shall be sealed with two (2) coats (one each joining end) of bituminous joint filler material conforming to ODOT Item 706.10 in addition to the O-ring gasket.

3. Channel inverts shall be smooth, formed to direct flow, and provide a minimum full 1/2 pipe cross section or as otherwise shown. Bencches shall have a minimum 1/2 inch per foot slope. All concrete shall be class "C" (4,000 psi at 28 days, ODOT Item 511).

4. No brick shall be allowed in new manhole construction unless approved by the engineer. Fired sewer brick is approved for repairs to existing brick manholes.

5. All new manholes having 15 inch or less inside diameter conduits shall be provided with a flexible neoprene or other approved entry gasket. Any such gasket shall be integral with the manhole wall. For manholes having greater than 15 inch inside diameter conduits, an approved watertight non-shrink grout seal shall be provided.

6. The manhole casting frame and lid shall as shown on the standard manhole frame and lid detail. When shown on the drawings lids shall be bolted down with a minimum four 5/16 inch countersunk S.S. machine bolts. Vented lids with maximum 3/4 inch holes shall be provided for all storm sewer manholes unless specifically shown otherwise.

7. Manhole castings shall be adjusted to grade using a maximum of twelve inches (12") of concrete doughnuts (minimum eight inch [8"] thickness and depth as required. All joints and castings shall have a full mortor bed mixture of two [2] parts sand, one [1] part portland cement, maximum one percent [1%] calcium, no lime and moisture cured for forty-eight [48] hours.

8. Unless separate pay items are provided, all protection and support of existing utilities and structures and protection and/or restoration of all surfaces including pavement, drives, curbs, sidewalks, grass, and any other surfaces shall be included in the unit prices bid for all sewer
ITEMS. RESTORATION SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS, SECTIONS PROVIDED ON THE DRAWINGS OR THE STANDARD CONSTRUCTION DRAWING, IN ACCORDANCE WITH ANY ROAD PERMITS, OR, IF NOT SHOWN OR SPECIFIED, SHALL BE REPLACED IN KIND WITH THE EXISTING ITEM THICKNESS AND MATERIAL REMOVED. INCLUDED ARE ALL EQUIPMENT, LABOR, AND MATERIALS NECESSARY FOR EXCAVATION, STONE FOUNDATION, BEDDING BACKFILL, GRANULAR BACKFILL, SHEETING, SHORING, BRACING, DEWATERING, COMPACTION OF ANY AND ALL MATERIALS, TOPSOILING, SEEDING, AGGREGATE, AND OTHER BASE MATERIALS, PAVEMENTS, SEALING OR JOINTS, CURBS, SIDEWALKS, AND RESTORATION OF ALL STRUCTURES AND SURFACES DISTURBED.

9. MANHOLE STEPS SHALL BE ODOT 711.31 REINFORCED PROPYLENE PLASTIC WITH A 12" MINIMUM WIDTH OF TREAD.

10. WHEN MANHOLE DEPTH EXCEEDS TWENTY FEET (20') THE BASE SLAB THICKNESS SHALL BE INCREASED TO TWELVE INCHES (12').