Lexington Fayette Urban County Government
Department of Public Works and Development

Standard Drawings 2008

Marwan A. Rayan, P.E.
Urban County Engineer
May 2008
May 1, 2008

Users of Lexington-Fayette Urban County Engineering Standard Drawings

Re: Standard Drawings 2008

Attached is the latest edition of the LFUCG Standard Drawings for construction of storm sewers, sanitary sewers, streets and roads in Lexington-Fayette County. These drawings are to replace any and all other standard drawings previously issued by the Division of Engineering.

These drawings become effective as of May 1, 2008 and any project dedicated to public use after the above date must comply with or contain references to these Standard Drawings or revisions thereof where applicable.

Questions or comments should be directed to:

Urban County Engineer
Division of Engineering
Fourth Floor
101 E. Vine Street
Lexington, KY 40507
859-258-3410

Sincerely,

[Signature]

Marwan A. Rayan, P.E.
Urban County Engineer

MAR:RAB:AFG

C: File

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See Chapter 11 of *LFUCG Stormwater Manual* for Approved Design Details

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MANHOLES - STORM DRAINAGE
**TABLE I**

**OF MINIMUM PARTIAL ANGLE**

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<tr>
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<td>2-1/2</td>
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<td>3-7/8</td>
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**GENERAL NOTES:**

1. ALL DIMENSIONS ARE BASED ON SIZE OF LARGEST PIPE IN MANHOLE.
2. MANHOLES FOR PIPE LARGER THAN 60" SHALL BE SPECIALLY DESIGNED.
3. IN CASES WHERE DEFLECTION ANGLES EXCEED MAXIMUM SHOWN IN TABLES, MANHOLE SHALL BE INCREASED IN SIZE OR SPECIALLY DESIGNED.
4. BOTTOM SLAB OF MANHOLES SHALL BE SPECIALLY DESIGNED WITH REGARD TO AREA, THICKNESS, AND REINFORCING IN SITUATIONS WHERE HIGH WATER TABLE OR UNSTABLE SOIL CONDITIONS EXIST.
5. MANHOLE BENCH SHALL SLOPE AT LEAST 1" PER FT. FROM WALLS TO CHANNELS AND SHALL HAVE SMOOTH FLOAT AND BRUSH FINISH.
6. ELEVATIONS OF PIPES IN MANHOLES SHALL BE SUCH THAT THE TOP OF ALL INFLOW PIPES WILL BE AT AN ELEVATION EQUAL TO OR GREATER THAN THE TOP OF THE EFFLUENT PIPE.
7. INFLOW PIPES MAY ENTER MANHOLES AT AN ELEVATION ABOVE THE CHANNELS AS REQUIRED TO AVOID CONFLICT WITH LARGER PIPES IN THE MANHOLE.

**TYPE “A” MANHOLE – CIRCULAR WALLS**

**CAST-IN-PLACE OR PRECAST CONCRETE**

**NOTES:**

1. PRECAST CONCRETE MANHOLE BARREL SHALL BE ASTM C-478, CLASS II pipe to 12” DEPTH AND C-78 CLASS III greater than 12” DEPTH.
2. BASE SECTION OF CIRCULAR MANHOLES MAY BE CAST-IN-PLACE CONCRETE, OR CUSTOM PRECAST CONCRETE WITH OPENINGS FOR PIPE.
3. BASE SECTIONS MAY BE SIMILAR TO SANITARY SEWER MANHOLE.
4. PROVIDE STEPS WITHIN 18” OF BENCH.

**CIRCULAR MANHOLE NOTES:**

1. THE ANGLE BETWEEN ANY TWO PIPES (i.e., ANGLE "Y" OR "Z") MUST BE GREATER THAN THE SUM OF THE PARTIAL ANGLES FROM TABLE I FOR THE MANHOLE SIZE SELECTED. FOR SMALLER ANGLES BETWEEN PIPES, LARGE MANHOLES MUST BE SELECTED. (SEE EXAMPLE BELOW)
2. THE MAXIMUM DEFLECTION ANGLE BETWEEN ANY INCOMING PIPE AND THE DISCHARGE PIPE SHALL BE NO MORE THAN 80° FOR PIPES UP TO 24" IN DIAMETER. THE MAXIMUM DEFLECTION ANGLE FOR 27" TO 42" PIPES SHALL BE 75° AND FOR PIPES LARGER THAN 42" THE MAXIMUM DEFLECTION ANGLE SHALL BE 60°.

**EXAMPLE FOR MANHOLE SIZE SELECTION:**

FOR MANHOLE SHOWN ABOVE, THE ANGLE BETWEEN 18" AND 30" PIPE IS 75° AND THE ANGLE BETWEEN 30" AND 36" PIPE IS 110°. THE TABLE INDICATES THAT FOR A 6'-0" DIAMETER MANHOLE THE MINIMUM PARTIAL ANGLE FOR AN 18" PIPE IS 22° AND FOR A 30" PIPE IS 40°. THE SUM OF THE PARTIAL ANGLES IS 66° THIS SUM IS LESS THAN THE 75°. THEREFORE, A 6'-0" MANHOLE DIAMETER IS ACCEPTABLE.
**TYPE "B" MANHOLE — NON-CIRCULAR WALLS, CAST-IN-PLACE CONCRETE**

**ALTERNATE—22°—50°**

**ALTERNATE—50°—68°**

**TYPE "B" MANHOLE FOR DEFLECTION ANGLES BETWEEN 22° & 90°**

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**NOTES:**

1. ALL DIMENSIONS ARE BASED ON SIZE OF LARGEST PIPE IN MANHOLE.
2. MANHOLES FOR PIPE LARGER THAN 60" SHALL BE SPECIALLY DESIGNED.
3. PIPES SHALL ENTER MANHOLE WALLS, NOT CORNERS. ALLOW 2" MINIMUM TO INSIDE CORNER FOR WALL CUT.
4. IN CASES WHERE DEFLECTION ANGLES EXCEED MAXIMUM SHOWN IN TABLES, MANHOLE SHALL BE SPECIALLY DESIGNED.
5. BOTTOM SLAB OF MANHOLES SHALL BE SPECIALLY DESIGNED WITH REGARD TO AREA, THICKNESS, AND REINFORCING IN SITUATIONS WHERE HIGH WATER TABLE OR UNSTABLE SOIL CONDITIONS EXIST.
6. MANHOLE BENCH SHALL SLOPE AT LEAST 1" PER FT. FROM WALLS TO CHANNELS AND SHALL HAVE SMOOTH FLOAT AND BRUSH FINISH.
7. THE TOP OF ALL INFLUENT PIPES WILL BE AT AN ELEVATION EQUAL TO THE TOP OF THE EFFLUENT PIPES.
8. INFLUENT PIPES MAY ENTER MANHOLES AT AN ELEVATION ABOVE THE CHANNELS AS REQUIRED TO AVOID CONFLICT WITH LARGER PIPES IN THE MANHOLE.
9. THE MAXIMUM DEFLECTION ANGLE BETWEEN ANY INCOMING PIPE AND OUT GOING PIPE SHALL BE NO MORE THAN 90° FOR PIPES UP TO 24" IN DIAMETER. THE MAXIMUM DEFLECTION ANGLE FOR 27" TO 42" PIPES SHALL BE 75° AND FOR PIPES LARGER THAN 42" THE MAX DEFLECTION ANGLE SHALL BE 60°.
CIRCULAR AND NON-CIRCULAR WALLS (TYPE "A" & TYPE "B")

STANDARD 4'-0" DIA. & 5'-0" CIRCULAR WALLS (TYPE "A")

NOTES:
1. BASE SECTION OF CIRCULAR MANHOLES MAY BE CAST-IN-PLACE CONCRETE OR CUSTOM PRECAST CONCRETE WITH OPENINGS FOR PIPE.
2. 6" OVERHANG IN BOTTOM SLAB IS NOT REQUIRED IF PRECAST MANHOLES ARE USED.
3. FLAT SLABS IN PAVED AREAS SHALL BE USED ONLY AS APPROVED BY ENGINEER.

STANDARD CIRCULAR MANHOLE - 6'–0" DIAMETER & LARGER TYPE "A" AND NON-CIRCULAR WALL MANHOLE - ALL SIZES TYPE "B"

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
MANHOLE FRAME AND COVERS

NOTES:
1. MINIMUM WEIGHT FOR THE 7" FRAME SHALL BE 185 LBS.
2. MINIMUM WEIGHT FOR THE SOLID COVER SHALL BE 120 LBS.
3. CASTINGS TO MEET ASTM A-48 CLASS 35.

MANHOLE STEPS

NOTES:
1. STEPS SHALL BE ASPHALT COATED CAST IRON OR POLYPROPYLENE PLASTIC COATED STEEL ROD OR OF A TYPE AND SIZE APPROVED BY THE ENGINEER.
2. STEPS SHALL BE SPACED APPROXIMATELY 12" TO 18" O.C. VERTICALLY SO AS TO FORM A CONTINUOUS LADDER.
3. STEPS SHALL BE REQUIRED IN MANHOLES WHEN THE STRUCTURE IS 4 FEET AND GREATER IN DEPTH. (MEASURE FROM FLOWLINE OF LOWEST PIPE TO TOP OF STRUCTURE.)
4. THE TREADS OF ALL STEPS SHALL HAVE ANTI-SKID PROPERTIES FOR HAND AND FOOT GRIPS.
5. MANHOLE STEPS SHALL BE INSTALLED IN A VERTICAL LINE AND SHALL COMPLY WITH OSHA STANDARDS IN ALL RESPECTS.
6. FOR CAST-IN-PLACE OR PRECAST CIRCULAR AND NON-CIRCULAR MANHOLES.
7. FIRST STEP SHALL BE NO MORE THAN 18" FROM TOP OF RIM.
4'-0" DIA.
SHALLOW MANHOLES

MARK NO. SIZE LENGTH TYPE
1 1 4 4'-5" STR.
2 3 " 4'-0" "
3 3 " 2'-8" "
4 2 " 2'-0" "
5 8 " 1'-6" "
6 2 " 1'-0" "

NOTES:
1. FOR PIPE SIZES 15" TO 24".
2. 9" O.C. SPACING EACH WAY.
3. 8" THICK SLAB.
4. 4'-10" O.D.
5. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.
6. CIRCULAR REBAR MAY BE USED, OR MARK 5 BARS AS SHOWN.

NOTE:
SLAB OUTER DIAMETER TO VARY WITH MANHOLE WALL THICKNESS, TO COMPLETELY COVER MANHOLE WALLS.

5'-0" DIA.
SHALLOW MANHOLES

MARK NO. SIZE LENGTH TYPE
1 2 4 3'-2" STR.
2 3 " 5'-3" "
3 2 " 5'-8" "
4 3 " 4'-2" "
5 4 " 3'-2" "
6 6 " 1'-6" "
7 2 " 1'-0" "

NOTES:
1. FOR PIPE SIZES 21" TO 33".
2. 9" O.C. SPACING EACH WAY.
3. 8" THICK SLAB.
4. 6'-0" O.D.
5. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.
6. CIRCULAR REBAR MAY BE USED, OR MARK 6 BARS AS SHOWN.
6'-0" DIA.

STANDARD MANHOLES

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<th>MARK</th>
<th>NO.</th>
<th>SIZE</th>
<th>LENGTH</th>
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NOTES:
1. FOR PIPE SIZES 15" TO 48".
2. 6" O.C. SPACING EACH WAY.
3. 12" THICK SLAB.
4. 7'-2" O.D.
5. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.

SIDE VIEW

6'-0" DIA.

SHALLOW MANHOLES

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NOTES:
1. FOR PIPE SIZES 15" TO 36".
2. 9" O.C. SPACING EACH WAY.
3. 8" THICK SLAB.
4. 7'-2" O.D.
5. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.

SIDE VIEW

SPECIAL BAR BENDS

NOTE:
SLAB OUTER DIAMETER TO VARY WITH MANHOLE WALL THICKNESS, TO COMPLETELY COVER MANHOLE WALLS.

TYPE A

TYPE A₁

LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
7'-0" DIA.
STANDARD MANHOLES

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NOTES:
1. FOR PIPE SIZES 15" TO 60".
2. 6" O.C. SPACING EACH WAY.
3. 12" THICK SLAB.
4. 8'-4" O.D.
5. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.

7'-0" DIA.
SHALLOW MANHOLES

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NOTES:
1. FOR PIPE SIZES 15" TO 36".
2. 9" O.C. SPACING EACH WAY.
3. 10" THICK SLAB.
4. 8'-4" O.D.
5. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.

SPECIAL BAR BENDS

TYPE A

NOTE:
SLAB OUTER DIAMETER TO VARY WITH MANHOLE WALL THICKNESS, TO COMPLETELY COVER MANHOLE WALLS.

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
8'-0" DIA.
STANDARD MANHOLE

MARK NO. SIZE LENGTH TYPE
1 1 6 15'-10" A
2 4 6 9'-0" STR.
3 1 3 8'-0" =
4 1 3 8'-8" =
5 1 3 8'-3" =
6 3 3 7'-9" =
7 3 3 7'-0" =
8 3 3 6'-0" =
9 5 3 4'-6" =
10 4 3 3'-0" =
11 2 3 3'-0" =
12 2 3 2'-9" =
13 2 3 2'-4" =
14 2 3 2'-0" =
15 2 3 1'-9" =
16 2 3 1'-7" =
17 2 3 1'-6" =
18 4 3 1'-0" =
19 2 3 4'-5" =
20 2 3 5'-0" =
21 2 3 4'-8" =
22 1 3 4'-4" =

8'-0" DIA.
SHALLOW MANHOLE

MARK NO. SIZE LENGTH TYPE
1 1 6 9'-6" A
2 1 5 9'-3" STR.
3 2 3 9'-0" =
4 4 3 8'-9" =
5 3 3 8'-0" =
6 3 3 7'-0" =
7 3 3 5'-5" =
8 4 3 2'-9" =
9 2 3 2'-3" =
10 2 3 1'-9" =
11 2 3 6'-6" =
12 1 3 6'-2" =
13 2 3 3'-3" =

NOTES:
1. FOR PIPE SIZES 15" TO 60".
2. 6" O.C. SPACING EACH WAY.
3. 12" THICK SLAB.
4. 9'-6" O.D.
5. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.

SIDE VIEW

SPECIAL BAR BENDS

NOTE:
SLAB OUTER DIAMETER TO VARY WITH MANHOLE WALL THICKNESS, TO COMPLETELY COVER MANHOLE WALLS.

STORM SEWER MANHOLE CIRCULAR SLABS 8'-0" DIAMETER

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
SPECIAL BAR BENDS

MARK NO. SIZE LENGTH TYPE
1 1 6 9'-6" A
2 12 5 6'-0" STR.
3 4 5 3'-8" "
4 2 5 3'-4" "

TOP SLAB
2'-0" OPENING

VERT. SECTION

BOTTOM SLAB

HORIZ. SECTION

MARK NO. SIZE LENGTH TYPE
5 4 6'-0" STR.

• 4 X (HEIGHT OF WALL (INCH)/10)
  (ROUNDED UP TO THE NEXT
  WHOLE NUMBER)

MARK NO. SIZE LENGTH TYPE
6 16 4 DIM. "H"-2" STR.

NOTES:
1. PROVIDE 2" X 4" KEY FOR ALL CONSTRUCTION
   JOINTS WHEN MANHOLE IS CAST IN PLACE.

2. 2" MIN. STEEL REINFORCEMENT
   COVER ALL FACES.

3. THIS MANHOLE IS INTENDED FOR PIPE AS
   INDICATED ON STD. DWG. 101, FOR MANHOLE
   STEPS AND OTHER DETAILS NOT SHOWN ON
   THIS SHEET, SEE STD. DWGS. 102 & 103.

4. DEPTHS INDICATED IN TITLE ARE MEASURED
   FROM SURFACE TO M.H. INVERT.
SPECIAL BAR BENDS

TOP SLAB
4'-0" OPENING

VERT. SECTION

BOTTOM SLAB

MARK NO. SIZE LENGTH TYPE
1 16 15'-10"
2 8 5 6'-0"
3 4 5 1'-9"
4 8 5 1'-4"
7 2 5 0'-10"

MARK NO. SIZE LENGTH TYPE
8 4 6'-0" STR.

* 4 X (HEIGHT OF WALL (INCH)/10)
(ROUNDED UP TO THE NEXT WHOLE NUMBER)

HORIZ. SECTION

MARK NO. SIZE LENGTH TYPE
9 16 4 DIM."H"-2" STR.

MARK NO. SIZE LENGTH TYPE
10 16 4 7'-0" STR.

NOTES:
1. PROVIDE 2" X 4" KEY FOR ALL CONSTRUCTION JOINTS WHEN MANHOLE IS CAST IN PLACE.

2. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.

3. THIS MANHOLE IS INTENDED FOR PIPE AS INDICATED ON STD. DWG. 101, FOR MANHOLE STEPS AND OTHER DETAILS NOT SHOWN ON THIS SHEET, SEE STD. DWGS. 102 & 103.

4. DEPTHS INDICATED IN THE TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.

LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
SPECIAL BAR BENDS

MARK NO. | SIZE | LENGTH | TYPE
--- | --- | --- | ---
1 | 1 | 6 | 9'-6" A1
2 | 14 | 5 | 7'-0" STR.
3 | 4 | 5 | 4'-8" *
4 | 2 | 5 | 4'-4" *

* 4 X (HEIGHT OF WALL (INCH)/10)
(ROUNDED UP THE NEXT WHOLE NUMBER)

TOP SLAB
2'-0" OPENING

MARK NO. | SIZE | LENGTH | TYPE
--- | --- | --- | ---
5 | * 4 | 7'-0" STR.

VERT. SECTION

MARK NO. | SIZE | LENGTH | TYPE
--- | --- | --- | ---
7 | 18 | 4 | 8'-0" STR.

BOTTOM SLAB

MARK NO. | SIZE | LENGTH | TYPE
--- | --- | --- | ---
6 | 20 | 4 | DIM. "H"-2" STR.

HORIZ. SECTION

MARK NO. | SIZE | LENGTH | TYPE
--- | --- | --- | ---

NOTES:
1. PROVIDE 2" x 4" KEY FOR ALL CONSTRUCTION JOINTS WHEN MANHOLE IS CAST IN PLACE.
2. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.
3. THIS MANHOLE IS INTENDED FOR PIPE AS INDICATED ON STD. DWG. 101, FOR MANHOLE STEPS AND OTHER DETAILS NOT SHOWN ON THIS SHEET, SEE STD. DWGS. 102 & 103.
4. DEPTHS INDICATED IN TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.

LEXINGTON--FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
**SPECIAL BAR BENDS**

**TOP SLAB**
4'-0" OPENING

**VERT. SECTION**

**BOTTOM SLAB**

**HORIZ. SECTION**

**MARK NO.  SIZE  LENGTH  TYPE**
1. 1  6  15'-10"  A
2. 12  5  7'-10"  STR.
3. 4  5  3'-4"  =
4. 4  5  2'-9"  =
5. 4  5  2'-5"  =
6. 4  5  2'-4"  =
7. 6  5  0'-10"  =

- 4 X (HEIGHT OF WALL (INCH)/10) (ROUNDED UP TO THE NEXT WHOLE NUMBER)

**MARK NO.  SIZE  LENGTH  TYPE**
8. * 4  7'-0"  STR.

**MARK NO.  SIZE  LENGTH  TYPE**
9. 20  4  DIM. "H"-2"  STR.

**NOTES:**
1. PROVIDE 2" x 4" KEY FOR ALL CONSTRUCTION JOINTS WHEN MANHOLE IS CAST IN PLACE.

2. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.

3. THIS MANHOLE IS INTENDED FOR PIPE AS INDICATED ON STD. DWG. 101, FOR MANHOLE STEPS AND OTHER DETAILS NOT SHOWN ON THIS SHEET, SEE STD. DWGS. 102 & 103.

4. DEPTHS INDICATED IN TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.
SPECIAL BAR BENDS

MARK NO. SIZE LENGTH TYPE
1 1 6 15'-10" A
2 12 5 7'-4" STR.
3 4 5 3'-3" =
4 4 5 2'-9" =
5 4 5 2'-7" =
6 6 5 2'-6" =
7 4 5 1'-2" =
8 4 5 0'-10" =

TYPE A

MARK NO. SIZE LENGTH TYPE
1 11 40 4 DIM. "H'-2" STR.

TYPE C

MARK NO. SIZE LENGTH TYPE
9 *1 5 7'-4" STR.
10 *2 4 9'-0" C

*1 = WALL HEIGHT (INCH)/10
*2 = WALL HEIGHT (INCH)/12
(ROUNDED UP TO THE NEXT WHOLE NUMBER)

VERT. SECTION

HORIZ. SECTION

MARK NO. SIZE LENGTH TYPE
8 18 5 8'-4" STR.

BOTTOM SLAB

LEADING EDGE O-O' OPENING

NOTES:
1. PROVIDE 2" X 4" KEY FOR ALL CONSTRUCTION JOINTS WHEN MANHOLE IS CAST IN PLACE.
2. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.
3. THIS MANHOLE IS INTENDED FOR PIPE AS INDICATED ON STD. DWG. 101, FOR MANHOLE STEPS AND OTHER DETAILS NOT SHOWN ON THIS SHEET, SEE STD. DWGS. 102 & 103.
4. DEPTHS INDICATED IN TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.
SPECIAL BAR BENDS

MARK NO. SIZE LENGTH TYPE
1 1 6 9'-6" A
2 4 5 5'-5" STR.
3 18 5 8'-0" M

VERT. SECTION

MARK NO. SIZE LENGTH TYPE
4 4 8'-0" STR.
+ 4 X (HEIGHT OF WALL)
(I")/10 (ROUNDED TO THE NEXT WHOLE NUMBER.)

HORIZ. SECTION

MARK NO. SIZE LENGTH TYPE
5 24 4 DIM. "H"-2" STR.

NOTES:
1. PROVIDE 2" X 4" KEYS FOR ALL CONSTRUCTION JOINTS WHEN MANHOLE IS CAST IN PLACE.
2. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.
3. THIS MANHOLE IS INTENDED FOR PIPE AS INDICATED ON STD. DWG. 101, FOR MANHOLE STEPS AND OTHER DETAILS NOT SHOWN ON THIS SHEET, SEE STD. DWGS. 102 & 103.
4. DEPTHS INDICATED IN TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.
**SPECIAL BAR BENDS**

**TOP SLAB**

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*4 X (HEIGHT OF WALL (INCH)/10) (ROUNDED UP TO THE NEXT WHOLE NUMBER)*

**HORIZ. SECTION**

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**BOTTOM SLAB**

**NOTES:**

1. PROVIDE 2" x 4" KEY FOR ALL CONSTRUCTION JOINTS WHEN MANHOLE IS CAST IN PLACE.

2. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.

3. THIS MANHOLE IS INTENDED FOR PIPE AS INDICATED ON STD. DWG. 101, FOR MANHOLE STEPS AND OTHER DETAILS NOT SHOWN ON THIS SHEET, SEE STD. DWGS. 102 & 103.

4. DEPTHS INDICATED IN TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.
**SPECIAL BAR BENDS**

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**MARK NO. SIZE LENGTH TYPE**

**VERT. SECTION**

**BOTTOM SLAB**

**HORIZ. SECTION**

**NOTES:**

1. PROVIDE 2" x 4" KEY FOR ALL CONSTRUCTION JOINTS WHEN MANHOLE IS CAST IN PLACE.

2. 2" MIN. STEEL REINFORCEMENT COVER ALL FACES.

3. THIS MANHOLE IS INTENDED FOR PIPE AS INDICATED ON STD. DWG. 101, FOR MANHOLE STEPS AND OTHER DETAILS NOT SHOWN ON THIS SHEET, SEE STD. DWGS. 102 & 103.

4. DEPTHS INDICATED IN TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.

**LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT**
SURFACE INLETS & CATCH BASINS
1. 6:1 Slopes are with reference to ditch grade.

2. When a box inlet is placed in a sag, omit the earth dike and longitudinal slope of the grate, and provide a concrete apron on each side of the inlet.

3. Rate of increase or decrease 0.36 cu. yd. per foot in height.

4. Deduct approximately 0.1 cu. yd. of concrete per pipe.

5. Compact this volume with D.G.A. base or equivalent.

6. Steps are required for depths greater than 4' refer to Std. Dwg. 103.
NOTES:
1. NO. 5 STEEL SHALL BE USED THROUGHOUT ON 12" CENTERS.
2. ALL STEEL SHALL HAVE A 2" MINIMUM CLEARANCE TO ANY CONCRETE FACE.
3. NO STEEL IS REQUIRED IN THE BOTTOM SLAB.
4. ALL VERTICAL STEEL SHALL EXTEND 4" INTO BOTTOM SLAB.
5. FOR USE IN PAVED AREAS ONLY.
6. PROVIDE MINIMUM 0.1" SLOPE THROUGH STRUCTURE FOR PIPES IN SERIES. CARRY THROUGH THROUGH. ONLY STRAIGHT THROUGH CONNECTIONS ARE ALLOWED.

SECTION E–E

SECTION F–F

ISOMETRIC VIEW

OPTIONAL PIPE FOR INLETS IN SERIES (SEE NOTE 6)

GRATE DETAILS

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
### BILL OF REINFORCEMENT

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*NO. OF BARS REQUIRED FOR H-4'-0"
ADD OR DEDUCT 4-A5 & 4-A7 FOR EACH 1'-0" INCREASE OR DECREASE IN H.

**BAR TYPES**

- **TYPE 1**
- **TYPE 2**
- **TYPE 3**
- **TYPE 4**
- **TYPE 5**

**NOTES:**
1. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMpressive STRENGTH OF 3500 PSI. STEEL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60. ALL EXPOSED EDGES SHALL BE BEVELED 3/4" UNLESS OTHERWISE SHOWN.
2. THIS DRAWING DEPICTS A CURB BOX INLET IN A GRADE SITUATION. FOR CURB BOX IN SAG SITUATION, DETAILS SHALL BE MODIFIED AS INDICATED IN DETAIL "A".
3. THE STANDARD OPENING LENGTH IS 10'-0" AS DETAILED HERE. THIS LENGTH MAY BE INCREASED OR DECREASED BASED ON HYDRAULIC ANALYSIS AND APPROVAL BY THE LEXINGTON-FAYETTE COUNTY URBAN GOVERNMENT ENGINEER. MODIFICATION TO THE OPENING LENGTH WILL REQUIRE MODIFICATION OF LENGTH OF BARS A9 & A10 AND INCREASE OR DECREASE IN NUMBER OF BARS A12, A13 & A14 MAINTAINING THE SAME MAXIMUM SPACING SHOWN ON THIS DRAWING.
4. MAXIMUM "H" FOR APPLICATION OF THIS DRAWING SHALL BE 10 FEET.
5. FIELD BEND OR CUT BARS A2, A4, AND A5 AS NECESSARY WHERE PIPES PENETRATE CHAMBER WALLS.
6. FOR CURB BOX INLET IN CURVE WITH CURB RADIUS OF LESS THAN 25', LONGITUDINAL BARS A9, A10 SHALL BE SHOP FABRICATED RADIALY.

---

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
**BILL OF REINFORCEMENT**

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* NO. OF BARS REQUIRED FOR H=4'-0" ADD OR DEDUCT 4-B5 & 4-B7 FOR EACH 1'-0" INCREASE OR DECREASE IN H.

**BAR TYPES**

**TYPE 1**

**TYPE 2**

**TYPE 3**

**TYPE 4**

**TYPE 5**

**NOTES:**

1. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMpressive STRENGTH OF 3500 PSI. STEEL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60. ALL EXPOSED EDGES SHALL BE BEVELED 3/8" UNLESS OTHERWISE SHOWN.

2. THIS DRAWING DEPICTS A CURB BOX INLET IN A GRADE SITUATION. FOR CURB BOX IN SAG SITUATION, DETAILS SHALL BE MODIFIED AS INDICATED IN DETAIL 'A'.

3. THE STANDARD OPENING LENGTH IS 10'-0" AS DETAILED HERE. THIS LENGTH MAY BE INCREASED OR DECREASED BASED ON HYDRAULIC ANALYSIS AND APPROVAL BY THE LEXINGTON-FAYETTE COUNTY URBAN GOVERNMENT ENGINEER. MODIFICATION TO THE OPENING LENGTH WILL REQUIRE MODIFICATION OF LENGTH OF BARS B9 & B10 AND INCREASE OR DECREASE IN NUMBER OF BARS B12, B13 & B14 MAINTAINING THE SAME MAXIMUM SPACING SHOWN ON THIS DRAWING.

4. MAXIMUM "H" FOR APPLICATION OF THIS DRAWING SHALL BE 10 FEET.

5. FIELD BEND OR CUT BARS B2, B4, AND B5 AS NECESSARY WHERE PIPES PENETRATE CHAMBER WALLS.

6. FOR CURB BOX INLET IN CURVE WITH CURB RADIUS OF LESS THAN 25', LONGITUDINAL BARS B9, B10 SHALL BE SHOP FABRICATED RADIALY.

7. 30° PIPE MAY BE APPROVED IF BOTH PIPES ARE INSTALLED ON THE SAME LINE.

---

**LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT**

**ISOMETRIC VIEW**

---

**DIVISION OF ENGINEERING**

**CURB BOX INLET TYPE "B" 5'x5' BOX 15"-24" PIPES**

---

**WORK THIS DWG. WITH STD. DWG. 123-1**

---

**APPENDIX**

---

**STANDARD DRAWING NO. 123-2**

---

**DRAFTSMAN**

---

**COMMISSIONER**

---

**DATE**

---

**REV水利**

---
## Bill of Reinforcement

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*NO. OF BARS REQUIRED FOR H=1"-0"
ADD OR DEDUCT 2-#8, 2-#7, #5-#8 FOR EACH 1'-0" INCREASE OR DECREASE IN H.

### Bar Types

**Type 1**
- 1-17°
- 17°
- 2-3°
- 3°

**Type 2**
- 1-17°
- 17°
- 5-3°
- 3°

**Type 3**
- 1-17°
- 17°
- 2-3°
- 3°

**Type 4**
- 2-3°

### Notes:
1. Concrete shall have a minimum 28 day compressive strength of 3500 psi. Steel reinforcement shall be ASTM A-615, Grade 60. All exposed edges shall be beveled 3/4" unless otherwise shown.
2. This drawing depicts a curb box inlet in a grade situation. For curb box inlet in sag situation, details shall be modified as indicated in detail 'A'.
3. The standard opening length is 10'-0" as detailed here. This length may be increased or decreased based on hydraulic analysis and approval by the Lexington-Fayette Urban County Government Engineer. Modification to the opening length will require modification of length of bars C10, C11 & C12 and increase or decrease in number of bars C14 & C15 maintaining the same maximum spacing shown on this drawing.
4. Maximum "H" for application of this drawing shall be 5 feet.
5. Field bend or cut bars C3, C5, C6 & C7 as necessary where pipes penetrate CHAMBER WALLS.
6. For curb box inlet in curve with curb radius of less than 25", longitudinal bars C10, C11 & C12 shall be shop fabricated radially.

---

LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT. DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
NOTES:

1. CURB BOX ADJUSTABLE 6" TO 9" TO MATCH TOP OF CURB.

2. NO. 5 STEEL SHALL BE USED THROUGHOUT ON 12" CENTERS. 2" CLEARANCE ON ALL EXTERIOR WALL BARS. EXTERIOR HORIZ. WALL BARS SHALL HAVE A 12" MIN. LAP AT CORNERS.

3. ALL EXPOSED FLATWORK SHALL HAVE A HAND FLOATED AND BROOMED FINISH.

4. NO STEEL IS REQUIRED IN BOTTOM SLAB.

5. ALL VERTICAL STEEL SHALL EXTEND 4" INTO BOTTOM SLAB. VERTICAL STEEL SHALL HAVE A 12" LAP INTO BOTTOM SLAB WITH 3" CLEARANCE FROM EXTERIOR BOTTOM.

6. SET BACK OF FRAME IN CONCRETE TO ANCHOR IN PLACE AFTER IT HAS BEEN ADJUSTED.

7. 18" MAX. PIPE DIAMETER.

8. EAST JORDAN IRON WORKS CATCH BASIN CURB INLET 7035 WITH TYPE MG GRATE OR EQUIVALENT.

SECTION C–C

SECTION D–D
BILL OF REINFORCEMENT

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STEEL REINFORCEMENT 105 LBS.
12" CLASS "A" CONCRETE 4.61 CU. YDS.
15" CLASS "A" CONCRETE 4.59 CU. YDS.
18" CLASS "A" CONCRETE 4.58 CU. YDS.

NOTES:
1. LOCATION OF OPENING MAY BE DETERMINED IN THE FIELD FOR A SIDE OR BOTTOM SPRING INLET.
2. TYPE "A" TO BE USED WHEN FILL OVER TOP IS 10' OR MORE.
NOTES:
1. SPRING BOX INLET TYPE "B" MAY BE USED WHEN FILL OVER TOP IS LESS THAN 10'.
   1) 12", 15", OR 18" DIAMETER PIPE OUTLET (SEE PIPE SECTIONS FOR SIZE AND TYPE)
2. MORTAR AROUND PIPE TO PREVENT SEEPAGE.
3. STEEL REINFORCEMENT PLACED 6" ON CENTERS.

STEEL REINFORCEMENT 13 LBS.
CLASS "A" CONCRETE 1.54 CU. YDS.

BILL OF REINFORCEMENT

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<tr>
<td>C</td>
<td>4</td>
<td></td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td></td>
<td>3'-2&quot;</td>
</tr>
</tbody>
</table>

MARK LOCATION DESCRIPTION
A TOP STRAIGHT
B C D

LEXINGTON--FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
TYPICAL ILLUSTRATIONS FOR CASTINGS

NOTES:
1. CHAIN SHACKLE, OR COLD SHUT OF AN APPROVED TYPE.
2. 3/8" PROOF COIL CHAIN OF SUFFICIENT LENGTH TO ALLOW REMOVAL AND DISPLACEMENT OF GRATE, 18" MIN.
3. 3/8" x 6" EYE BOLT, NUT, AND WASHER.
4. 3/8" HEX HEAD CAP SCREW (GRADE 2), NUT AND WASHERS. LENGTH DETERMINED BY THICKNESS OF FRAME OR GRATE.
5. 3/8" DIA. HOLE FOR CAP SCREW. BATTERY THREADS ON CAP SCREW TO PREVENT REMOVAL OF NUT.
6. ALL EYE BOLTS SHALL HAVE A CONTINUOUS OR SOLID EYE.
7. ALL HARDWARE SHALL BE GALVANIZED AND OF COMMERCIAL QUALITY AND SHALL BE APPROVED BY THE ENGINEER.
8. THE COST OF THE COMPLETE SECURITY DEVICE, INSTALLED, SHALL BE INCIDENTAL TO THE COST OF THE STRUCTURE.
9. THE DESIGNS SHOWN ARE ACCEPTABLE; HOWEVER ARE SUBJECT TO CHANGE IF APPROVED IN WRITING BY THE ENGINEER.

PLAN VIEW

SECTION A-A
GRATE CONNECTED TO FRAME

PLAN VIEW

SECTION B-B
GRATE CONNECTED TO WALL

ALTERNATE FOR STRUCTURAL STEEL MEMBERS

LUG ON CENTER CROSS MEMBER
AND BOLT ASSEMBLY
(AXONOMETRIC VIEW)

TYPICAL ILLUSTRATIONS FOR STRUCTURAL STEEL UNITS

LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
CHANNELS & DITCHES
TYPICAL SECTION

NOTES:
1. AGGREGATE CHANNEL LINING WILL NOT BE REQUIRED IN THE BOTTOM OF THE DITCH WHERE SOLID ROCK IS ENCOUNTERED. SIDE SLOPES SHALL BE LINED.
2. AGGREGATE ESTIMATED ON THE BASIS OF 0.50 TON/90 YD. PER FOOT OF DEPTH.

SHEET NOTES:
① WIDEN CHANNEL LINING AT STRUCTURES TO PREVENT EROSION.
② ALTERNATE LOCATION OF GROUNDLINE.
③ MINIMUM DEPTH OF CHANNEL LINING SHALL BE 24". LESSER DEPTHS SHALL HAVE APPROVAL FROM THE ENGINEER. STONE SHALL BE WELL GRADED SO THAT OPENINGS BETWEEN LARGER STONES ARE FILLED WITH SMALLER STONES.
NOTES:

1. BEDDING MATERIAL SHOULD NOT BE SMALLER THAN KDOT NO. 2 COARSE AGGREGATE STONE. THE REQUIREMENTS FOR KDOT NO. 2 COARSE AGGREGATE STONE ARE AS FOLLOWS:

<table>
<thead>
<tr>
<th>SIEVE SIZE (INCHES)</th>
<th>PERCENT PASSING</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 1/2</td>
<td>100</td>
</tr>
<tr>
<td>2 1/2</td>
<td>70-85</td>
</tr>
<tr>
<td>1 1/2</td>
<td>0-10</td>
</tr>
</tbody>
</table>

2. BEDDING SHOULD BE AT LEAST THREE INCHES AND SPREAD UNIFORMLY.

3. PLASTIC FILTER FABRIC MAY BE USED IN PLACE OF OR IN CONJUNCTION WITH GRAVEL FILTERS. THE FOLLOWING PARTICLE SIZE RELATIONSHIPS MUST EXIST:

A. FOR FILTER FABRIC ADJACENT TO GRANULAR MATERIALS CONTAINING 50 PERCENT OR LESS (BY WEIGHT) OF FINE PARTICLES (LESS THAN 0.074 mm):

\[
\frac{D}{D_{50}} \geq 1
\]

2.) TOTAL OPEN AREA OF FILTER IS LESS THAN 36 PERCENT.

B. FOR FILTER FABRIC ADJACENT TO ALL OTHER SOILS:

1.) EOS* LESS THAN U.S. STANDARD SIEVE NO. 70
2.) TOTAL OPEN AREA OF FILTER IS LESS THAN 10 PERCENT.

4. NO FILTER FABRIC SHOULD BE USED WITH LESS THAN 4 PERCENT OPEN AREA OR AN EOS* LESS THAN U.S. STANDARD SIEVE NO. 100.

5. *EOS – EQUIVALENT OPENING SIZE TO A U.S. STANDARD SIEVE SIZE.

6. THE FOLLOWING CHART SHOWS HOW TO DETERMINE THE DIAMETER OF STONE IN RELATION TO DESIGN VELOCITY.

<table>
<thead>
<tr>
<th>VELOCITY (FEET/SECOND)</th>
<th>STONE DIAMETER (INCHES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2 1/2</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>14</td>
</tr>
</tbody>
</table>
4-NO. 8 BARS 3'-0" LONG USED TO ANCHOR CHANNEL LINING (EACH UNIT)

DIRECTION OF WIDTH
FLOW LENGTH

SEAMS

PLANT

9'-0" MIN.

FILTER FABRIC

CHANNEL LINING 6'-0" WIDE

CUT OFF ANCHORS WHEN ROCK IS ENCOUNTERED

ISOMETRIC VIEW

NOTE:
1. SECURE THE LACING WIRE AT THE CORNER OF THE BASKET BY LOOING AND TWISTING, CONTINUE LACING THROUGHOUT WITH DOUBLE LOOPS AT APPROXIMATELY 5 INCH INTERVALS. EACH UNIT SHALL CONSIST OF LININGS SUPPLIED IN WIDTHS OF 6'-0" AS SHOWN AND LENGTHS IN MULTIPLES OF 3'-0".

2. AGGREGATE ESTIMATED ON THE BASIS OF 0.375 TONS PER SQ. YD.

3. MATTRESS SHALL BE MANUFACTURED FROM WIRE WITH A MINIMUM TENSILE STRENGTH OF 40,000 PSI.

4. STONE SIZE PER MANUFACTURER SPECIFICATIONS.
NOTES:
1. USE "CLASS A" CONCRETE THROUGHOUT.
2. COMPACTION, FINISHING AND CURING SHALL BE THE SAME AS REQUIRED FOR CONCRETE SIDEWALK (USE WHITE COMPOUND).
3. IF THE CONTRACTOR ELECTS TO USE A CONSTRUCTION JOINT IN THE POURING OF THE PAVED DITCH, NO. 4 TIE BARS SPACED 6" O.C. SHALL BE USED (SEE SECTION C-C).
4. INTERMEDIATE ANCHORS MAY BE REQUIRED BY THE ENGINEER FOR SPECIAL CASES. A SPECIAL DESIGN WILL BE REQUIRED IN THIS SITUATION.
5. SHOULD THE TERRAIN OF THE EXISTING GROUND BE SO THAT WATER WOULD DRAIN INTO THE DITCH FROM ONE SIDE ONLY, THEN SODDING WILL BE REQUIRED ON THAT ONE SIDE ONLY OF THE DITCH.
6. EXPANSION JOINTS & SEALER REQUIRED ON ENDS ABUTTING STRUCTURES AND ANCHORS ON ENDS NOT ABUTTING STRUCTURES.
7. IF FIBER REINFORCED CONCRETE IS USED THE WWF 6 x 6 MAY BE ELIMINATED.
8. DO NOT PLACE PAVED DITCH ON DISTURBED SOIL.

LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
ROADWAY DRAINAGE
HEADWALLS
NOTES:

1. HEIGHT OF FOOTER SHALL BE 18" FOR SOIL AND 12" IN ROCK.
2. ALL EXPOSED EDGES TO BE CHAMFERED ¼".
3. ALL EXPOSED SURFACES TO HAVE A RUBBED FINISH.
4. STANDARD HEADWALLS ARE FLUSH WITH SOIL FILL.
5. RAISED HEADWALLS PROTRUDE 6" ABOVE SOIL FILL.
6. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN VERTICAL FACE "D" IS GREATER THAN 30°.

PLAN ELEVATION

SECTION X–X
**PLAN ELEVATION**

**FRONT ELEVATION**

**SECTION X–X**

**ISOMETRIC VIEW**

---

**HEADWALL DIMENSIONS**

<table>
<thead>
<tr>
<th>HEADWALL TYPE</th>
<th>DIA. OF PIPE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 STANDARD ELL</td>
<td>15&quot;</td>
<td>1'–8 1/2&quot;</td>
<td>1'–2 1/2&quot;</td>
<td>4'–3&quot;</td>
<td>2'–9&quot;</td>
<td>2'–3&quot;</td>
<td>3'–11 1/2&quot;</td>
<td>3'–6&quot;</td>
<td>2'–9&quot;</td>
<td>5'–2 1/2&quot;</td>
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<tr>
<td></td>
<td>18&quot;</td>
<td>1'–9&quot;</td>
<td>1'–3&quot;</td>
<td>4'–6&quot;</td>
<td>3'–0&quot;</td>
<td>2'–6&quot;</td>
<td>4'–3&quot;</td>
<td>4'–0&quot;</td>
<td>3'–0&quot;</td>
<td>5'–9&quot;</td>
</tr>
<tr>
<td></td>
<td>21&quot;</td>
<td>1'–9 1/2&quot;</td>
<td>1'–3 1/2&quot;</td>
<td>4'–9&quot;</td>
<td>3'–3&quot;</td>
<td>2'–9&quot;</td>
<td>4'–6 1/2&quot;</td>
<td>4'–6&quot;</td>
<td>3'–3&quot;</td>
<td>6'–3 1/2&quot;</td>
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<tr>
<td></td>
<td>24&quot;</td>
<td>1'–10&quot;</td>
<td>1'–4&quot;</td>
<td>5'–0&quot;</td>
<td>3'–6&quot;</td>
<td>3'–0&quot;</td>
<td>4'–10&quot;</td>
<td>5'–0&quot;</td>
<td>3'–6&quot;</td>
<td>6'–10&quot;</td>
</tr>
<tr>
<td></td>
<td>27&quot;</td>
<td>1'–10 1/2&quot;</td>
<td>1'–4 1/2&quot;</td>
<td>5'–3&quot;</td>
<td>3'–9&quot;</td>
<td>3'–3&quot;</td>
<td>5'–1 1/2&quot;</td>
<td>5'–6&quot;</td>
<td>3'–9&quot;</td>
<td>7'–4 1/2&quot;</td>
</tr>
<tr>
<td>5 RAISED ELL</td>
<td>15&quot;</td>
<td>1'–8 1/2&quot;</td>
<td>1'–2 1/2&quot;</td>
<td>4'–9&quot;</td>
<td>3'–3&quot;</td>
<td>3'–0&quot;</td>
<td>4'–8 1/2&quot;</td>
<td>4'–3&quot;</td>
<td>3'–6&quot;</td>
<td>5'–11 1/2&quot;</td>
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<tr>
<td></td>
<td>18&quot;</td>
<td>1'–9&quot;</td>
<td>1'–3&quot;</td>
<td>5'–0&quot;</td>
<td>3'–6&quot;</td>
<td>3'–3&quot;</td>
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<td>4'–9&quot;</td>
<td>3'–9&quot;</td>
<td>6'–6&quot;</td>
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<tr>
<td></td>
<td>21&quot;</td>
<td>1'–9 1/2&quot;</td>
<td>1'–3 1/2&quot;</td>
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<td>3'–9&quot;</td>
<td>3'–6&quot;</td>
<td>5'–3 1/2&quot;</td>
<td>5'–3&quot;</td>
<td>4'–0&quot;</td>
<td>7'–0 1/2&quot;</td>
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<tr>
<td></td>
<td>24&quot;</td>
<td>1'–10&quot;</td>
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<td>5'–7&quot;</td>
<td>5'–9&quot;</td>
<td>4'–3&quot;</td>
<td>7'–7&quot;</td>
</tr>
<tr>
<td></td>
<td>27&quot;</td>
<td>1'–10 1/2&quot;</td>
<td>1'–4 1/2&quot;</td>
<td>5'–9&quot;</td>
<td>4'–3&quot;</td>
<td>4'–0&quot;</td>
<td>5'–10 1/2&quot;</td>
<td>6'–3&quot;</td>
<td>4'–6&quot;</td>
<td>8'–1 1/2&quot;</td>
</tr>
</tbody>
</table>

**NOTES:**

1. HEIGHT OF FOOTER SHALL BE 18" FOR SOIL AND 12" IN ROCK.
2. ALL EXPOSED EDGES TO BE CHAMFERED 3/4".
3. ALL EXPOSED SURFACES TO HAVE A RUBBED FINISH.
4. STANDARD HEADWALLS ARE FLUSH WITH SOIL FILL.
5. RAISED HEADWALLS PROTRUDE 6" ABOVE SOIL FILL.
6. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN VERTICAL FACE "D" IS GREATER THAN 30°.
1. SOLID CONCRETE BOTTOM REQUIRED.

NOTES:
1. VOLUME DISPLACED BY BARREL OF PIPE HAS BEEN COMPUTED USING INSIDE DIAMETER OF PIPE.
2. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN VERTICAL FACE "D" IS GREATER THAN 30°.

<table>
<thead>
<tr>
<th>DIMENSIONS</th>
<th>DIAMETER OF PIPE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15&quot; 18&quot; 24&quot; 30&quot; 36&quot;</td>
</tr>
<tr>
<td>A</td>
<td>1'-2&quot; 1'-3&quot; 1'-4&quot; 1'-5&quot; 1'-6&quot;</td>
</tr>
<tr>
<td>B</td>
<td>4'-3&quot; 4'-6&quot; 5'-0&quot; 5'-6&quot; 6'-6&quot;</td>
</tr>
<tr>
<td>C</td>
<td>1'-6&quot; 1'-6&quot; 1'-6&quot; 1'-6&quot; 2'-0&quot;</td>
</tr>
<tr>
<td>D</td>
<td>2'-9&quot; 3'-0&quot; 3'-6&quot; 4'-0&quot; 4'-6&quot;</td>
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<tr>
<td>E</td>
<td>3'-9&quot; 4'-0&quot; 4'-6&quot; 4'-9&quot; 5'-0&quot;</td>
</tr>
<tr>
<td>F</td>
<td>6'-2&quot; 6'-6&quot; 7'-2&quot; 7'-7&quot; 8'-0&quot;</td>
</tr>
<tr>
<td>G</td>
<td>3'-9&quot; 4'-0&quot; 4'-6&quot; 4'-9&quot; 5'-0&quot;</td>
</tr>
<tr>
<td>H</td>
<td>5'-2&quot; 5'-9&quot; 6'-10&quot; 7'-11&quot; 9'-0&quot;</td>
</tr>
<tr>
<td>C.Y. CONC. ONE HEADWALL</td>
<td>2.96 3.53 4.72 6.03 6.79</td>
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<tr>
<td>DIMENSION</td>
<td>DIAMETER OF PIPE</td>
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<tr>
<td>-----------</td>
<td>-----------------</td>
</tr>
<tr>
<td></td>
<td>30&quot;</td>
</tr>
<tr>
<td>A</td>
<td>3'-9&quot;</td>
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<td>B</td>
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<tr>
<td>J</td>
<td>3'-9&quot;</td>
</tr>
<tr>
<td>M</td>
<td>0'-5&quot;</td>
</tr>
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</tr>
<tr>
<td>V</td>
<td>0'-8&quot;</td>
</tr>
<tr>
<td>W</td>
<td>0'-8&quot;</td>
</tr>
<tr>
<td>X</td>
<td>-</td>
</tr>
<tr>
<td>Y</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>Z</td>
<td>-</td>
</tr>
</tbody>
</table>

| CU.YDS.CONC. | HEADWALLS | 3.36 | 4.30 | 5.35 | 6.53 | 7.82 | 9.22 | 18.76 | 20.95 | 23.25 | 25.67 | 31.48 | 34.31 | 37.25 | 40.32 |
| LBS.STEEL | HEADWALLS | 281 | 363 | 430 | 496 | 583 | 687 | 1320 | 1571 | 1815 | 2043 | 2451 | 2753 | 3050 | 3379 |

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LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

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### BENT BAR SHAPES

<table>
<thead>
<tr>
<th>K</th>
<th>1&quot;-6&quot;(30'-60&quot;)</th>
<th>2&quot;-6'(66'-108&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>0'-5'(30'-60&quot;)</td>
<td>0'-8'(66'-180&quot;)</td>
</tr>
<tr>
<td>K</td>
<td>1'-8&quot;(36'-60&quot;)</td>
<td>2'-2&quot;(66'-84&quot;)</td>
</tr>
<tr>
<td>K</td>
<td>2'-3&quot;(90'-108&quot;)</td>
<td>2'-3&quot;(90'-108&quot;)</td>
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### BAR SIZES AND VARYING

<table>
<thead>
<tr>
<th>S</th>
<th>Z</th>
<th>E</th>
<th>FT</th>
<th>IN</th>
<th>FT</th>
<th>IN</th>
<th>FT</th>
<th>IN</th>
<th>FT</th>
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<tbody>
<tr>
<td>A</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>8</td>
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<td>5</td>
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<td>4</td>
<td>7</td>
</tr>
<tr>
<td>B</td>
<td>N</td>
<td>4</td>
<td>6</td>
<td>5</td>
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<td>4</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>0</td>
</tr>
</tbody>
</table>

### NOTES:

1. NUMBER OF BARS IN ONE HEADWALL.
2. DIMENSIONS ARE OUT TO OUT OF BARS.
3. ALL BARS ARE STRAIGHT EXCEPT THOSE SHOWN BELOW.

---

### SHEET 3 OF 4

### DIVISION OF ENGINEERING

### BILL OF REINFORCEMENT

30"-90" DIAMETER CIRCULAR PIPE HEADWALLS 0' SKEW

---

**STANDARD DRAWING NO.** 154-3
<table>
<thead>
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<th>MARK</th>
<th>SIZE</th>
<th>NO</th>
<th>LGTH</th>
<th>K</th>
<th>MARK</th>
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</tbody>
</table>

### NOTES:

1. **NUMBER OF BARS IN ONE HEADWALL.**
2. **DIMENSIONS ARE OUT TO OUT OF BARS.**
3. **ALL BARS ARE STRAIGHT EXCEPT THOSE SHOWN BELOW.**

#### BENT BAR SHAPES

- **K**
  - 1'-6"(30'-60")
  - 2'-6"(66'-108")

- **BARS**
  - **E**
    - 0'-6"(30'-60")
    - 0'-8"(66'-180")

- **BARS**
  - **F**
    - 1'-8"(30'-60")
    - 2'-8"(66'-108")

**BARS** AND **V**

---

**LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT**
### Dimensions and Quantities

<table>
<thead>
<tr>
<th>Headwall Type</th>
<th>Pipe Dia.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>Cu. Yd. Conc. 2 Headwalls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Double Line</td>
<td>18&quot;</td>
<td>1'-9&quot;</td>
<td>1'-3&quot;</td>
<td>4'-6&quot;</td>
<td>3'-0&quot;</td>
<td>10'-5&quot;</td>
<td>3'-9&quot;</td>
<td>4.18</td>
<td></td>
</tr>
<tr>
<td>Standard Triple Line</td>
<td>18&quot;</td>
<td>1'-9&quot;</td>
<td>1'-3&quot;</td>
<td>4'-6&quot;</td>
<td>3'-0&quot;</td>
<td>13'-4&quot;</td>
<td>3'-9&quot;</td>
<td>4.57</td>
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<tr>
<td>Raised Double Line</td>
<td>18&quot;</td>
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<td>11'-11&quot;</td>
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<td>5.28</td>
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</tr>
<tr>
<td>Raised Triple Line</td>
<td>18&quot;</td>
<td>1'-10&quot;</td>
<td>1'-4&quot;</td>
<td>5'-6&quot;</td>
<td>4'-0&quot;</td>
<td>14'-0&quot;</td>
<td>5'-3&quot;</td>
<td>7.43</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

1. All volumes are in cubic yards for two headwalls; volume displaced by barrel of pipe has been computed using inside diameter of pipe. No deduction has been made for beveled edges.

2. Where headwalls are located at the edge of the shoulder, the top of the headwalls shall be parallel to the edge of shoulder.

3. Where a raised headwall is used on the outlet end of the pipe, the tops of both walls shall be at the same elevation.

4. Chain link fence is required on all headwalls when vertical face "E" is greater than 30'.

---

**Plan**

**Section A-A**

**Elevation**
NOTES:

1. SEE SHEETS 2 AND 3 OF CURRENT STD. DWG. 159 FOR DIMENSIONS, QUANTITIES, AND BILL OF REINFORCEMENT.

2. ENCIRCLED LETTERS, ○, INDICATE STEEL BAR LOCATIONS.

3. BARS ○, ○, ○ ARE SPACED 1'-0" O.C. ALL OTHER BARS SHALL BE EVENLY SPACED.

4. BARS □ ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT THE END OF EACH WING.

5. BARS ○ ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT THE TOP OF EACH WING.

6. HEADWALLS LOCATED AT THE EDGE OF SHOULDERS SHALL BE PARALLEL TO CENTERLINE OF THE ROAD.

7. APRON BETWEEN WINGS SHALL BE SLOPED IN DIRECTION OF FLOW EQUAL TO SLOPE OF PIPE. FRONT FACE AND ENDS OF WINGS SHALL REMAIN VERTICAL.

8. DIMENSIONS FROM FACE OF CONCRETE TO STEEL SHALL BE 2" CLEAR DISTANCE.

9. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN VERTICAL FACE "C" IS GREATER THAN 30°. SEE STD. DWG. 308.
## Dimensions for Multiple Pipe Headwalls - 0° Skew

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>DOUBLE</th>
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<tr>
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<td>36&quot;</td>
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<tr>
<td>A</td>
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<td>B</td>
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<td>1'-6&quot;</td>
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<td>C</td>
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<td>F</td>
<td>11'-6&quot;</td>
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<td>J</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>M</td>
<td>0'-5&quot;</td>
<td>0'-5&quot;</td>
</tr>
<tr>
<td>T</td>
<td>0'-8&quot;</td>
<td>0'-8&quot;</td>
</tr>
<tr>
<td>W</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
</tr>
</tbody>
</table>

### Class "A" Conc. Cu. Yds. 2 Headwalls
- 4.91
- 6.22
- 7.75
- 9.38
- 6.49
- 8.20
- 10.19
- 12.30

### Lbs. Steel 2 Headwalls
- 379
- 480
- 561
- 660
- 475
- 594
- 702
- 797

---

*LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT*
**PLAN VIEW OF STRUCTURE LOCATIONS**

**CONDITION NO. 1**
- 0' SKEW

**CONDITION NO. 2**
- 1' TO 30' SKEW

**CONDITION NO. 3**
- GREATER THAN 30' SKEW

---

**NOTES:**

1. **THE MINIMUM REQUIREMENT FOR REINFORCING STEEL SHALL BE GRADE 40. FIELD BENDING WILL BE PERMITTED.**

2. **ONE ADDITIONAL<br>BAR WILL BE REQUIRED FOR EACH 15' SKEW.**

3. **t IS CONCRETE PIPE WALL THICKNESS.**

---

**DETAIL SHOWING LOCATION OF SLOTS FOR GRATES**

- **A,B FOR 2 GRATES**
- **A,B,C FOR 3 GRATES**
- **A,B,C,D FOR 4 GRATES**

---

**DIMENSIONS**

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<thead>
<tr>
<th>P</th>
<th>H</th>
<th>L</th>
<th>S</th>
<th>R</th>
<th>V</th>
<th>W</th>
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<th>B</th>
<th>C</th>
<th>D</th>
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<td>2'-11½&quot;</td>
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<td>10'-8&quot;</td>
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<td>3'-6½&quot;</td>
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<td>6'-11½&quot;</td>
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<td>2'-9½&quot;</td>
<td>2'-9½&quot;</td>
<td>1'-9½&quot;</td>
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**NO. 4 REINFORCEMENT BARS**

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<tbody>
<tr>
<td>14</td>
<td>AT 6'-5&quot;</td>
<td>3 AT 8'-6&quot;</td>
</tr>
<tr>
<td>16</td>
<td>AT 8'-0&quot;</td>
<td>2 AT 10'-2&quot;</td>
</tr>
<tr>
<td>18</td>
<td>AT 9'-6&quot;</td>
<td>1 AT 12'-6&quot;</td>
</tr>
<tr>
<td>20</td>
<td>AT 11'-0&quot;</td>
<td>3 AT 15'-0&quot;</td>
</tr>
</tbody>
</table>

---

**LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT**

---

**SLOPED AND FLARED BOX INLET-OUTLET 18"-24"-30"-36" ALL SKews**

---

**DIVISION OF ENGINEERING**

---

**STANDARD DRAWING NO. 162**
<table>
<thead>
<tr>
<th>BOX INLET-Oouri SIZE</th>
<th>GRATE</th>
<th>BAR NO. 1</th>
<th>BAR NO. 2</th>
<th>BAR NO. 3</th>
<th>BAR NO. 4</th>
<th>LBS. STRUCTURAL STEEL</th>
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<tbody>
<tr>
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<td>LENGTH</td>
<td>LENGTH</td>
<td>NO. BARS</td>
<td>LENGTH</td>
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<td>4</td>
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<tr>
<td></td>
<td>2</td>
<td>2'-0&quot;</td>
<td>3'-7 1/2&quot;</td>
<td>4'-6 1/2&quot;</td>
<td>6</td>
<td>1'-10&quot;</td>
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<td>24&quot;</td>
<td>1</td>
<td>3'-0&quot;</td>
<td>3'-1 1/2&quot;</td>
<td>4'-6 1/2&quot;</td>
<td>5</td>
<td>2'-10&quot;</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3'-0&quot;</td>
<td>4'-8 1/2&quot;</td>
<td>6'-1 1/2&quot;</td>
<td>8</td>
<td>2'-10&quot;</td>
</tr>
<tr>
<td>30&quot;</td>
<td>1</td>
<td>3'-0&quot;</td>
<td>3'-8 1/2&quot;</td>
<td>5'-1 1/2&quot;</td>
<td>6</td>
<td>2'-10&quot;</td>
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<tr>
<td></td>
<td>2</td>
<td>3'-0&quot;</td>
<td>5'-3 1/2&quot;</td>
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<td>2'-10&quot;</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2'-0&quot;</td>
<td>6'-10 1/2&quot;</td>
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<td>13</td>
<td>1'-10&quot;</td>
</tr>
<tr>
<td>36&quot;</td>
<td>1</td>
<td>3'-0&quot;</td>
<td>4'-3 1/2&quot;</td>
<td>5'-8 1/2&quot;</td>
<td>7</td>
<td>2'-10&quot;</td>
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<tr>
<td></td>
<td>2</td>
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<td>5'-10 1/2&quot;</td>
<td>7'-3 1/2&quot;</td>
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<td>2'-0&quot;</td>
<td>8'-6 1/2&quot;</td>
<td>9'-5 1/2&quot;</td>
<td>16</td>
<td>1'-10&quot;</td>
</tr>
</tbody>
</table>

**NOTES:**

- (1) Equally space bars No. 3.
- (2) Size of grate either 2'-0" or 3'-0".
- (3) 5 1/2" for 2'-0" grate, 7" for 3'-0" grate.

1. All components are 1" x 2" structural steel bars.

2. See STD. DWG. 162.

3. Secure grate to structure with chain shackle, see STD. DWG. 128.

---

**Typical Grate**
NOTES:
1. NO. 5 STEEL BARS TO BE USED THROUGHOUT ON 12" CENTERS.
2. HEIGHT OF WALL SHALL BE DETERMINED BY THE AMOUNT OF FILL BEHIND PIPE. TOP OF WALL SHALL BE 18" ABOVE TOP O.D. OF PIPE.
3. TOP OF END SILL SHALL BE LEVEL WITH CENTERLINE OF PIPE.
4. CHANNEL LINING TO BE WIDTH OF END SILL, 18" MINIMUM THICKNESS, AND COMPOSED OF CLASS III CHANNEL LINING.
5. ALL VERTICAL OR SLOPED EXPOSED SURFACES SHALL HAVE A RUBBED FINISH.
6. ALL EXPOSED FLAT WORK TO HAVE A HAND FLOATED AND BROomed FINISH.
7. ALL EXPOSED EDGES SHALL HAVE A 3/4" CHAMFER.
8. ALL STEEL SHALL HAVE 2" MINIMUM CLEARANCE TO THE CONCRETE FACE ON THE BACKFILL SIDE OF THE WALLS.
9. FENCES REQUIRED ON HEADWALLS.
NOTES:
1. NO. 5 STEEL BARS SHALL BE USED THROUGHOUT ON 12" CENTERS EXCEPT ON BAFFLE WHERE HORIZONTAL AND VERTICAL STEEL WILL BE ON 6" CENTERS.
2. HEIGHT OF WALL SHALL BE DETERMINED BY THE AMOUNT OF FILL BEHIND PIPE.
   TOP OF WALL SHALL BE 18" ABOVE TOP O.D. OF PIPE.
3. TOP OF END SILL SHALL BE LEVEL WITH CENTERLINE OF PIPE.
4. TOP OF BAFFLE SHALL BE LEVEL WITH CROWN OF PIPE, AND THE BOTTOM SHALL BE LEVEL WITH CENTERLINE OF PIPE.
5. CHANNEL LINING TO BE 2 TIMES THE WIDTH OF THE END SILL AND EXTEND A MINIMUM OF 4' BEYOND THE STILLING BASIN WITH AN 18" MINIMUM THICKNESS AND COMPOSED OF CLASS III CHANNEL LINING.
6. CHANNEL LINE SPILL SLOPES BEYOND SIDES OF HEADWALL WITH CLASS III CHANNEL LINING.
   CHANNEL LINING SHALL EXTEND 4' IN WIDTH ON SLOPES AT WINGWALL AND TO DOWNSTREAM END OF CHANNEL.
7. ALL VERTICAL OR SLOPED EXPOSED SURFACES SHALL HAVE A RUBBED FINISH.
8. ALL EXPOSED FLATWORK SHALL HAVE A HANDFLOATED AND BROOMED FINISH.
9. ALL EXPOSED EDGES SHALL HAVE A \( \frac{3}{4} '' \) CHAMFER.
10. ALL STEEL SHALL HAVE A 2'' MINIMUM CLEARANCE TO THE CONCRETE FACE ON THE BACKFILL SIDE OF THE STRUCTURE.
11. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN THE VERTICAL FACE IS GREATER THAN 30''.
12. ALL LARGER PIPES SHALL HAVE A SPECIAL DESIGN STILLING BASIN.
13. ALL LONGITUDINAL REINFORCING BARS IN BAFFLE SHALL HAVE SUFFICIENT ANCHORAGE LENGTH IN SIDEWALLS.
SILT & EROSION CONTROL

See Chapter 11 of LFUCG Stormwater Manual
RETAINING STRUCTURES
NOTES:
1. The retaining wall depicted on this drawing shall be used when the height ("H" dimension) of the wall is 2'-6" to 12'-0" provided the fill complies with the following conditions:
   - Case 1 — Top of fill is level with top of wall.
   - Case 2 — Wall is surcharged with dead load fill slopes of 2:1 or less.
2. Areas and volumes have been computed without deducting for beveled edges or pipe drains. When a retaining wall varies in height, the prismoidal formula shall be used in computing volumes.
3. Gravity type retaining walls shall be constructed of class "A" concrete.
4. Transverse expansion joints 1/2 inch in width shall be placed at intervals of not over 30 feet throughout the length of retaining walls. Expansion joint material shall be placed therein. All exposed edges shall be beveled 3/4 inch. The walls shall not be surcharged except in special cases wherein special drawings will be furnished.

SHEET NOTES:
Special designs shall be required when any one of the following conditions exist:
- A: wall height is greater than 12'-0" (case 1 or case 2 fill).
- B: wall is surcharged with dead load fill slopes greater than 2:1.
- C: wall is surcharged with a live load within the limits of a 1:1 slope extending from the base of the wall.
- D: minimum value for firm soil is 2'-0".
- E: batter: H=3'-0" to less than 5'-0" (vertical) H=5'-0", to less than 10'-0" (1":1") H=10'-0" to 12'-0" (2":1")
TRENCHING
PIPE LAID IN ROCK
OR SOIL TRENCH

CONTRACTOR TO PROVIDE ADEQUATE MEANS TO PREVENT FLOATING OF PIPE WHEN INSTALLING CRADLE

PRECAST CONCRETE BLOCK OR BRICK BEHIND EACH BELL NOT TO EXCEED 6" SPACING

CONCRETE CLASS "A"

STANDARD CONCRETE ENCASEMENT
(NOTE: AS REQUIRED BY DESIGN)

NOTES:
1. COVER, UP TO AND INCLUDING ZONE 4 SHALL BE ESTABLISHED BEFORE TRENCH EXCAVATION.

2. ALL SANITARY SEWER LINES CONSTRUCTED FROM NON-METALLIC MATERIALS SHALL HAVE MAGNETIC MARKER TAPE INSTALLED IN THE TRENCH ABOVE THE SANITARY SEWER LINE.

3. MAGNETIC MARKER TAPE FOR SANITARY SEWER ONLY.

PIPE BACKFILL DESCRIPTIONS

<table>
<thead>
<tr>
<th>ZONE 1</th>
<th>NO. 9 STONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZONE 2</td>
<td>NO. 9 OR NO. 57 STONE</td>
</tr>
<tr>
<td>ZONE 3</td>
<td>COMPACTED DGA</td>
</tr>
<tr>
<td>ZONE 4</td>
<td>CONSOLIDATED SOIL, (NO ROCK GREATER THAN 6&quot; DIAMETER), NO. 9, OR NO. 57 STONE</td>
</tr>
<tr>
<td>ZONE 5</td>
<td>12&quot; MAX. TOPSOIL, NO ROCK ALLOWED</td>
</tr>
</tbody>
</table>

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
CONCRETE PAVEMENT

NOTES:
1. REPLACE CONCRETE PAVEMENT WITH NEW CONCRETE PAVEMENT, 6" MINIMUM OR EXISTING THICKNESS, WHICHEVER IS GREATER.

2. JOINT SEAL PERIMETER OF CUT PAVEMENT WITH FLEXMASTER POURABLE CRACK SEALANT 1109 OR APPROVED EQUAL.

3. MAGNETIC MARKER TAPE FOR SANITARY SEWER ONLY.

PIPE BACKFILL DESCRIPTIONS

<table>
<thead>
<tr>
<th>ZONE 1</th>
<th>NO. 9 STONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZONE 2</td>
<td>NO. 9 OR NO. 57 STONE</td>
</tr>
<tr>
<td>ZONE 3</td>
<td>COMPACTED DGA</td>
</tr>
<tr>
<td>ZONE 4</td>
<td>CONSOLIDATED SOIL, NO ROCK GREATER THAN 6&quot; DIAMETER, NO. 9, OR NO. 57 STONE</td>
</tr>
<tr>
<td>ZONE 5</td>
<td>12&quot; MAX. TOPSOIL, NO ROCK ALLOWED</td>
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</tbody>
</table>

BITUMINOUS PAVEMENT

LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
PIPE BACKFILL DESCRIPTIONS

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<tbody>
<tr>
<td>ZONE 1</td>
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<td>NO. 9 OR NO. 57 STONE</td>
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<td>ZONE 3</td>
<td>COMPACTED DGA</td>
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<td>ZONE 4</td>
<td>CONSOLIDATED SOIL (NO ROCK GREATER THAN 6&quot; DIAMETER), NO. 9, OR NO. 57 STONE</td>
</tr>
<tr>
<td>ZONE 5</td>
<td>12&quot; MAX. TOPSOIL, NO ROCK ALLOWED</td>
</tr>
</tbody>
</table>

NOTES:

1. PER KYTC SPECIFICATION 601.03.03 FROM STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION EDITION 2004, OR MOST RECENT.

2. REPLACE CONCRETE PAVEMENT WITH NEW CONCRETE PAVEMENT, 6" MINIMUM OR EXISTING THICKNESS, WHICHER IS GREATER.

3. JOINT SEAL PERIMETER OF CUT PAVEMENT WITH FLEXMASTER POURABLE CRACK SEALANT 1109 OR APPROVED EQUAL.
### Table of

Maximum Allowable Fill Heights

(Live Load Not Included)

<table>
<thead>
<tr>
<th>Diameter (Inches)</th>
<th>Ductile Iron Pipe</th>
<th>Polyvinyl Chloride (PVC) Pipe</th>
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<tbody>
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<td>Class 50 •</td>
<td>SDR-35</td>
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<tr>
<td>Maximum Depth of Cover (Feet)</td>
<td>Maximum Depth of Cover (Feet)</td>
<td>Maximum Depth of Cover (Feet)</td>
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<tr>
<td>48</td>
<td>13</td>
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</tr>
</tbody>
</table>

* Lightest Class of Ductile Iron Pipe

**Notes:**

1. Depth is based on laying condition utilizing No. 9 stone encasing pipe from 6" minimum below pipe to a plane, level with the top of the pipe and 6" to 12" No. 9 stone to edge of trench.

2. Weight of soil and rock cover mix is assumed to be approximately 120 lb/cu. ft.

3. Ductile Iron Pipe has flexible lining.

4. Design engineers should use this standard drawing for general guidelines and should check their design for safe, non-destructive fill heights for actual brand of pipe proposed.

5. Special trenching details and procedures should be used where fill depths are higher than those shown in Table.

6. Installations requiring a depth greater than 25", must be approved by the engineer.
MANHOLES
SECTION A--A

PIPE WITH TOP HALF REMOVED OR PAVED INVERT

LEXINGTON--FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

SECTION B--B

NOTES:
1. ALL BARREL JOINTS BETWEEN BASE AND BARREL, BETWEEN BARREL AND TOP, BETWEEN TOP AND ADJUSTING RINGS, BETWEEN ADJUSTING RINGS AND FRAME SHALL HAVE ONE OUTER MASTIC SEAL AND AN INNER SEAL OF NONSHRINK GROUT.

2. COAT OUTSIDE OF ADJUSTING RINGS WITH SEMI-FIBRATED ASPHALT DAMPROOFING COMPOUND APPLIED BY BRUSH OR SPRAY.

3. WATER STOP SHOULD BE PROVIDED FOR INLETS AND OUTLETS OF EVERY MANHOLE, DESIGNED FOR TYPE OF PIPE USED AND WITH EXPANSIVE GROUT. SEE STD. DWG. 213 FOR WATER STOP DETAIL.

4. MANHOLES MUST PASS VACUUM TEST PER ASTM C-1244 PRIOR TO ACCEPTANCE.

PREFORMED MASTIC SEAL

5 1/4"

MANHOLE BASE MAY BE EITHER ROUND OR SQUARE

PROVIDE COLLAR OF 6" FOR FUTURE ADJUSTMENT PRECAST CONCRETE RINGS

SET FRAME CASTING IN FULL MASTIC BED FOR WATERTIGHT FRAME & LID -- SEE APPLICABLE STANDARD DRAWING

GRADE

PRECAST CONCRETE FLAT SLAB COVER WITH MASTIC SEAL

MANHOLE RING

(SEE STD. DWG. 103)

NO. 9 STONE BEDDING

2'-0"

4'-0" & 5'-0"

5" FOR 4' MANHOLE

6" FOR 5' MANHOLE

5'-5" MAX

5'-5" MIN

B

B

NO. 9 STONE BEDDING

NO. 9 STONE BEDDING

LEXINGTON--FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

DIVISION OF ENGINEERING

TYPICAL PRECAST CONCRETE SHALLOW MANHOLE FOR PIPES 24" AND LARGER

STATION DRAWING NO. 210

REV

MAP

1/1/08

COMMISSIONER

5/16/08

Scriber
MANHOLE BASE MAY BE EITHER ROUND OR SQUARE

NOTES:
1. ALL BARREL JOINTS BETWEEN BASE AND BARREL, BETWEEN BARREL AND TOP, BETWEEN TOP AND ADJUSTING RINGS, BETWEEN ADJUSTING RINGS AND FRAME SHALL HAVE ONE OUTER MASTIC SEAL AND AN INNER SEAL OF NONSHRINK GROUT.
2. COAT OUTSIDE OF ADJUSTING RINGS WITH SEMI-FIBERED ASPHALT DAMPROOFING COMPOUND APPLIED BY BRUSH OR SPRAY.
3. WATER STOPS SHOULD BE PROVIDED FOR INLETS AND OUTLETS OF EVERY MANHOLE, DESIGNED FOR TYPE OF PIPE USED AND WITH EXPANSIVE GROUT. SEE STD. DWG. 213 FOR WATER 3/10" DETAIL.
4. NO REINFORCMENT NEEDED IN BOTTOM SLAB AT DEPTHS UP TO 12'. AT DEPTHS GREATER THAN 12' REINFORCE WITH NO. 4 BARS - 12" C-C.
5. A DIFFERENCE OF FLOW ELEVATION MORE THAN 24" REQUIRES AN OUTSIDE DROP. (SEE STD. DWG. 212)
6. MANHOLE STEPS SHALL BE ALIGNED WITH STRAIGHT SIDE OF CONCENTRIC CONE SECTION, AND ALIGNED OVER THE OUTLET PIPE.
7. PIPES SHALL NOT ENTER THE CONE SECTION.
8. MANHOLES MUST PASS VACUUM TEST PER ASTM C-1244 PRIOR TO ACCEPTANCE.

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
NOTES:
1. ALL BARREL JOINTS BETWEEN BASE AND BARREL, BETWEEN BARREL AND TOP, BETWEEN TOP AND ADJUSTING RINGS, BETWEEN ADJUSTING RINGS AND FRAME SHALL HAVE ONE OUTER MASTIC SEAL AND AN INNER SEAL OF NONSHRINK GROUT.
2. COAT OUTSIDE OF ADJUSTING RINGS WITH SEMI-FIBRATED ASPHALT DAMPROOFING COMPOUND APPLIED BY BRUSH OR SPRAY.
3. WATER STOPS SHOULD BE PROVIDED FOR INLETS AND OUTLETS OF EVERY MANHOLE, DESIGNED FOR TYPE OF PIPE USED AND WITH EXPANSIVE GROUT. SEE STD. DWG. 213 APPLICABLE FOR WATER STOP DETAIL.
4. NO REINFORCEMENT NEEDED IN BOTTOM SLAB AT DEPTHS UP TO 12' AT DEPTHS GREATER THAN 12' REINFORCE WITH NO. 4 BARS - 12" C-C.
5. PROVIDE A MINIMUM FALL OF 0.1 FOOT FROM DROP TO MANHOLE OUTLET.
6. MANHOLES SHALL PASS VACUUM TEST PER ASTM C-1244 PRIOR TO ACCEPTANCE.
7. PIPE SHALL NOT ENTER CONE SECTION.
8. MANHOLE STEPS SHALL BE ALIGNED WITH STRAIGHT SIDE OF CONCENTRIC CONE SECTION, AND ALIGNED OVER OUT-LET PIPE.
9. DO NOT USE IN CASES WHERE THE DROP IS 2'-0" OR LESS.
NOTES:
1. LIFT RINGS TO BE CUT BEFORE ADDING THE NEXT RING OR TOP.
2. COAT OUTSIDE AND IN BETWEEN ADJUSTING RINGS WITH SEMI-FIBRATED ASPHALT DAMPING COMPOUND APPLIED BY BRUSH OR SPRAY.
3. GRADE RINGS WITH NON-PARALLEL SURFACES MAY BE USED TO ADJUST CASTING TO SLOPED SURFACE.
4. CONCRETE: CLASS "A" 3500 PSI AT 28 DAYS, AND IN ACCORDANCE WITH ASTM C-478, OR LATEST EDITION.
5. NO MORE THAN 2 GRADE RINGS MAY BE USED AT ONE LOCATION AND THE MAXIMUM HEIGHT OF ALL RINGS USED SHALL NOT EXCEED 12 INCHES.
6. APPLY MASTIC BETWEEN ALL JOINTS.

<table>
<thead>
<tr>
<th>GRADE RING WIDTH CHART</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>2&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
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<tr>
<td>4&quot;</td>
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<tr>
<td>6&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
</tr>
<tr>
<td>12&quot;</td>
</tr>
</tbody>
</table>
GENERAL NOTES

1. SHALLOW MANHOLE TYPE CONSTRUCTION SHOWN ON STD. DWG. 210 MAY BE USED FOR ALL MANHOLES UP TO 5' IN DEPTH.

2. ALL DIMENSIONS ARE BASED ON SIZE OF LARGEST PIPE IN MANHOLE.

3. MANHOLES FOR PIPE LARGER THAN 36” SHALL BE SPECIALLY DESIGNED.

4. BOTTOM SLAB OF MANHOLES SHALL BE SPECIALLY DESIGNED WITH REGARD TO AREA, THICKNESS, AND REINFORCING IN SITUATIONS WHERE HIGH WATER TABLE OR UNSTABLE SOIL CONDITIONS EXIST.

5. MANHOLE STEPS SHALL BE INSTALLED IN A VERTICAL LINE AND SHALL COMPLY WITH OSHA STANDARDS IN ALL RESPECTS.

6. ALL FLOORS OF MANHOLES SHALL SLOPE AT LEAST 1” PER FT. FROM WALL TO CHANNELS AND SHALL HAVE SMOOTH FLOAT AND BRUSH FINISH.

7. CHANNEL SURFACE OF MANHOLES FROM INLET TO OUTLET SHALL HAVE SMOOTH FLOAT FINISH.

8. ELEVATIONS OF PIPES IN MANHOLES SHALL BE SUCH THAT THE TOP OF ALL INFLOW PIPES WILL BE AT AN EL-EVATION EQUAL TO OR GREATER THAN THE TOP OF THE EFFLUENT PIPE.

9. A MINIMUM FALL OF 0.10 FOOT SHALL BE PROVIDED.

10. BASE OF MANHOLES GREATER THAN 12’ DEEP TO BE REINFORCED WITH NO. 4 BARS AT 12” BOTH WAYS.

11. ASPHALT DAMPROOFING COMPOUND IS REQUIRED ON PRECAST MANHOLES IN WET AREAS OR OTHERWISE AS DIRECTED BY THE ENGINEER.

12. LEAKS IN MANHOLES OBSERVED DURING CONSTRUCTION OR INSPECTION SHALL BE CORRECTED IMMEDIATELY.

13. MANHOLES SHALL PASS VACUUM TEST PER ASTM C-1244 PRIOR TO ACCEPTANCE.

14. ALL INLETS, INCLUDING LATERALS, MUST HAVE FLOW CHANNELS.

15. NEW CONNECTIONS TO EXISTING SANITARY SEWER MANHOLES MUST REPLACE EXISTING BRICK MANHOLES OR DAMAGED MANHOLES AT NO EXPENSE TO THE LFUCG.

16. FIELD POURED BASES (DOGHOUSE MANHOLES) SHALL ONLY BE ALLOWED WITH PRIOR APPROVAL OF THE LFUCG.

SPECIFICATIONS

1. CASTINGS SHALL BE ASTM A-48, CLASS 35.

2. CONCRETE FOR MANHOLES, CRADLE ENCASMENT, ETC. SHOWN IN THESE DETAILS SHALL BE CLASS “A”.

3. CONCRETE MANHOLE BARREL CONSTRUCTION SHALL CONFORM TO ASTM C-478 OR ITS LATEST REVISION.
CIRCULAR MANHOLE NOTES:

1. THE ANGLE BETWEEN ANY TWO PIPES (e.g. ANGLE "Y" OR "Z") MUST BE GREATER THAN THE SUM OF THE PARTIAL ANGLES. REFER TO SEPARATE STANDARD DRAWINGS FOR TABLE OF MINIMUM PARTIAL ANGLES. ANGLES SMALLER THAN LISTED ON TABLE SHALL REQUIRE LARGER MANHOLE SELECTION.

2. THE MAXIMUM DEFLECTION ANGLE BETWEEN ANY INCOMING PIPE AND THE CENTERLINE EXTENSION OF THE DISCHARGE PIPE SHALL BE NO MORE THAN 90° FOR PIPES UP TO 24" IN DIAMETER. THE MAXIMUM DEFLECTION ANGLE FOR 27" TO 36" PIPES SHALL BE 75°.

EXAMPLE FOR SANITARY MANHOLE SIZE SELECTION:

FOR MANHOLE SHOWN AT RIGHT, THE ANGLE BETWEEN THE 18" AND 30" PIPES IS 85° AND THE ANGLE BETWEEN THE 30" AND 36" PIPES IS 105°. THE TABLE INDICATES THAT FOR A 3'-0" DIAMETER MANHOLE THE MINIMUM PARTIAL ANGLE FOR AN 18" PIPE IS 34° AND FOR A 30" PIPE IS 50°. THE SUM OF THE PARTIAL ANGLES IS 84°, THIS SUM IS LESS THAN THE 85° THEREFORE, A 3'-0" MANHOLE DIAMETER IS ACCEPTABLE.

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>P. ANGLE</th>
<th>L. DIST.</th>
<th>P. ANGLE</th>
<th>L. DIST.</th>
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</thead>
<tbody>
<tr>
<td>15&quot;</td>
<td>36°</td>
<td>1'-10&quot;</td>
<td>30°</td>
<td>2'-3&quot;</td>
</tr>
<tr>
<td>18&quot;</td>
<td>43°</td>
<td>1'-8&quot;</td>
<td>34°</td>
<td>2'-3&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
<td>53°</td>
<td>1'-6&quot;</td>
<td>39°</td>
<td>2'-2&quot;</td>
</tr>
<tr>
<td>27&quot;</td>
<td>-</td>
<td>-</td>
<td>45°</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>30&quot;</td>
<td>-</td>
<td>-</td>
<td>50°</td>
<td>1'-11&quot;</td>
</tr>
</tbody>
</table>

PLAN SECTION
FRAME DETAIL

NOTE:
MANHOLE FRAME & LID ASSEMBLY SHALL HAVE A MINIMUM LID WEIGHT OF 120 LBS. AND A TOTAL MINIMUM FRAME & LID WEIGHT OF 305 LBS. WITH ALL STEEL IN ACCORDANCE WITH ASTM A-48 CLASS 35 SPEC.
CONNECTIONS
SECTION A-A

NOTE:
LATERAL LENGTH REQUIREMENT IS THE GREATER OF:
6'-0" AS PROJECTED ON THE HORIZ. PLANE
1'-0" OUTSIDE THE EASEMENT
1'-0" INSIDE THE PROPERTY LINE

SANITARY SEWER LINE
CRUSHED STONE NO. 9, SEE APPLICABLE STANDARD DRAWING

45° MIN.
"T" BRANCH

30° MIN. COVER, UNLESS APPROVED BY THE ENGINEER, AND SHALL MEET STATE PLUMBING CODE

IN GENERAL ALL LATERALS SHALL BE INSTALLED TO WITHIN 6' OF THE FINISHED SURFACE GRADE

6" TO 12"
45° ANGLE

PER LFUCG ENG/DWAQ MANUAL, 4" OR 6" PIPE TO EASEMENT OR PROPERTY LINE WITH EASILY REMOVABLE WATER TIGHT PLUG AT END.

PROVIDE NO. 5 BAR 8' LONG TO PROTECT END OF PIPE FROM TRENCHING EQUIPMENT

LEXPON—Fayette URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
NOTE:
SEWER PIPE FROM HOUSE TO THE LONG
SWEEP "L" MUST BE IN ACCORDANCE WITH
STATE PLUMBING CODE AND LFUCG ENG/OWAG
MANUALS.

REFER TO STD. DWG. 231 FOR DETAILS OF
"HOUSE LATERAL FOR GREATER THAN 6" DEEP
SEWER IN SOIL AND STD. DWG. 230 FOR
DETAILS OF "HOUSE LATERAL FOR GREATER
THAN 6" DEEP SEWER IN SOIL AND ROCK
EXCAVATION"

REFER TO STD. DWG. 232 FOR DETAILS
OF "HOUSE LATERAL FOR SHALLOW SEWER
IN SOIL OR ROCK"

PIPE AND INSTALLATION PER
STATE PLUMBING CODE AND
LFUCG ENG/OWAG MANUALS.

APPROVED
CONNECTION
DEVICE

SEE STD. DWG. 200 FOR
BEDDING, TRENCHING, LAYING,
AND BACKFILLING

GROUND LINE

FERNCO ADAPTER OR APPROVED EQUAL, OR
METALLIC TAPE WRAPPED AROUND OUTSIDE
OF PIPE

CLEAN - OUT
TEE

HOUSE
NOTES:

SEWER PIPE FROM HOUSE TO CLEANOUT MUST BE IN ACCORDANCE WITH STATE PLUMBING CODE AND LFUCG ENG/DWAQ MANUALS.

TWO-WAY CLEANOUT TEE IS TO BE INSTALLED BY THE PLUMBER AND OR CONTRACTOR PRIOR TO CONNECTION OF THE LATERAL TO PUBLIC SANITARY SEWER LINE.

CLEANOUT TO BE INSTALLED AT THE END OF PUBLICLY MAINTAINED SEWER. POINT TO BE DETERMINED BY THE DIVISION OF ENGINEERING.
NOTES:

1. A WATERSTOP SHALL BE PROVIDED ON THE UPSTREAM SIDE OF THE DOWNSTREAM MANHOLE.

2. SPECIAL DESIGN REQUIRED WHEN COVER IS 30° OR LESS.
GENERAL NOTES:

1. THIS STRUCTURE IS TO BE ACCESSIBLE FOR MAINTENANCE OR INSPECTION WITH COVERS AND CLEANOUTS BROUGHT TO GRADE.

2. DESIGN CRITERIA SHALL BE HS-20 LOADING.

3. FLOW TO THE INTERCEPTOR SHALL EXCLUDE SANITARY SEWAGE AND SURFACE DRAINAGE.

4. DESIGN AND CAPACITY OF GREASE INTERCEPTOR TO BE CERTIFIED BY ENGINEER IN ACCORD WITH KENTUCKY STATE PLUMBING CODE AND REVIEWED FOR CAPACITY BY THE DIVISION OF ENGINEERING PRIOR TO CONSTRUCTION.

5. MULTIPLE COMPARTMENT INTERCEPTORS ARE REQUIRED.

6. PIPE CLEANOUT TEE SHALL BE THE SAME SIZE AS THE PIPE AND BE WITHIN 6' OF THE GREASE INTERCEPTOR ON THE OUTLET LINE.

7. MANUFACTURER WILL PROVIDE GREASE TRAP WITH TWO(2) ACCESS POINTS AS SHOWN, PLUMBING CONTRACTOR TO INSTALL FIXTURES AS SHOWN.

8. THE MINIMUM CAPACITY OF INTERCEPTORS IS 1000 GALLONS.
Date: February 2, 2012

Re: LFUCG Standard Drawings 250 Revision

The Lexington Fayette Urban County Government, Department of Environmental Quality and Public Works, has revised the Division of Engineering Standard Drawings 250 – Schematic Example For Grease Interceptor. This Standard Drawing became effective on January 16, 2012 and replaces any/all previous versions.

Attached is the revised Standard Drawing.


If you have questions please contact Mr. Andrew Grunwald, P.E. with the Division of Engineering at 258-3410.

Questions or Comments should be directed to:

Urban County Engineer
Division of Engineering
Fourth Floor
101 E. Vine Street
Lexington, KY 40507
859-258-3410

Sincerely,

[Signature]

Marwan A. Rayan, P.E.
Urban County Engineer

MAR:RAB:AFG

C: File

12.1000.106.Letter for Amended STD#250.doc

HORSE CAPITAL OF THE WORLD

101 East Vine Street 4th Floor Lexington, KY 40507 Ph: (859)258-3410 Fax: (859)258-3458 www.lfucg.com
REMOVE PORTION OF EXISTING MANHOLE & REPLACE WITH WATER-PROOF NON-SHRINK GROUT OR MORTAR AND A WATERTIGHT GASKET

REMOVE PORTION OF EXISTING CONCRETE BENCH. FINISH FLOW LINE SURFACE SMOOTH

FLEXIBLE ACID RESISTANT NEOPRENE GASKET WATERSTOP

FLEXIBLE ACID RESISTANT NEOPRENE GASKET WATERSTOP

NEW SEWER PIPE

1" MIN (TYP)

REMOVE PORTION OF EXISTING MANHOLE & REPLACE WITH WATER-PROOF NON-SHRINK GROUT OR MORTAR AND A WATERTIGHT GASKET

EXISTING MANHOLE

EXISTING SEWER

ALL HOLES CUT INTO SEWER MANHOLES SHALL BE CORE DRILLED.

SEWER CONNECTION TO EXISTING MANHOLE
STREETS & ROADS
NON-RESIDENTIAL COLLECTOR

NON-RESIDENTIAL AND INDUSTRIAL COLLECTORS

RESIDENTIAL COLLECTOR AND INDUSTRIAL LOCALS

RESIDENTIAL COLLECTOR

(Obsolele) - Used to complete existing streets

NOTES:
1. SLOPES AND DRAINAGE DITCHES OUTSIDE THE R.O.W. SHALL BE APPROVED BY THE ENGINEER.

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
NOTES:
1. CONCRETE SHALL BE KDOT CLASS "A".
2. SAWS CONTRACTION JOINTS SHALL BE CONSTRUCTED EVERY 20 FEET, WITH A MIN. DEPTH OF 3", IN ACCORDANCE WITH KDOT STANDARD SPECIFICATION.
3. EXPANSION JOINTS SHALL BE CONSTRUCTED AT ALL BREAKS IN ALIGNMENT, AT CONTACT WITH NEW OR EXISTING CONCRETE, AT ALL DRAINAGE INLETS, AT THE BEGINNING AND ENDING POINTS OF CURVES, AND NOT TO EXCEED 200' MAXIMUM SPACING FOR SLIP FORM APPLICATION AND 30' MAXIMUM SPACING FOR HAND PLACED.
4. ALL CONCRETE SHALL BE CURED WITH WHITE PIGMENTED MEMBRANE FORMING COMPOUND (AASHTO M 148, TYPE 2).

LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
INTEGRAL CURB, TYPE 1

NOTES:
1. CONCRETE SHALL BE KDOT CLASS "A".
2. SAWED CONTRACTION JOINTS SHALL BE CONSTRUCTED EVERY 20 FEET, 3" MINIMUM DEPTH.
3. THE CONTRACTOR HAS THE OPTION OF CONSTRUCTING THE STANDARD INTEGRAL CURB AS DETAILED IN EITHER TYPE 1 OR 2. IF TYPE 2 IS CHOSEN A LONGITUDINAL CONSTRUCTION JOINT SHALL BE REQUIRED AND THE REMAINING PAVEMENT AND CURB SHALL BE CONSTRUCTED MONOLITHIC WITHOUT A HORIZONTAL CONSTRUCTION JOINT AND ACCOMPANYING REINFORCING STEEL (TYPE 1).
4. EXPANSION JOINTS SHALL BE CONSTRUCTED AT ALL BREAKS IN ALIGNMENT, AT ALL DRAINAGE INLETS AND AT THE BEGINNING AND ENDING POINTS OF CURVES.
5. ALL CONCRETE, EXCEPT BONDING SURFACES, SHALL BE CURED WITH WHITE PIGMENTED MEMBRANE FORMING COMPOUND (AASHTO M 148, TYPE 2).

MONOLITHIC CURB AND SIDEWALK
NOTES:

1. CONCRETE SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED ON A THOROUGHLY COMPACTED SUB-GRADE AND SHALL BE FOUR AND ONE HALF (4 1/2) INCHES IN THICKNESS AND A MINIMUM WIDTH OF FOUR (4) FEET. CONCRETE SHALL HAVE SPECIFICATIONS FOR CLASS "A", KENTUCKY DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS, CURRENT EDITION. WHITE PIGMENTED (TYPE 2, CLASS "A" OR "B") CURING COMPOUND IS REQUIRED (ALSO KENTUCKY DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS, CURRENT EDITION).

2. EXPANSION JOINTS SHALL BE PLACED AT THIRTY-TWO (32) FOOT INTERVALS. IN EXISTING NEIGHBORHOODS, EXPANSION MATERIAL SHALL BE PLACED AT THE BEGINNING AND END OF NEWLY CONSTRUCTED AREAS.

3. THE SIDEWALKS SHALL BE PLACED ADJACENT TO THE STREET RIGHT-OF-WAY LINE. SLOPE TOWARD CURB SHALL BE ONE QUARTER (1/4) OF AN INCH TO THE FOOT. CONSTRUCTION IN EXISTING NEIGHBORHOODS SHALL REQUIRE THE CONTRACTOR TO MATCH EXISTING GRADE AND SIDEWALK WIDTH UNLESS SPECIFIED OTHERWISE BY THE DIVISION OF ENGINEERING.

SHEET NOTES:

1. NORMAL SIDEWALK WIDTH SHALL BE 4' UNLESS CHANGE IS AUTHORIZED BY URBAN COUNTY ENGINEER'S OFFICE.

2. DISTANCE WILL VARY WITH ROAD CROSS-SECTION.
RAMP TYPE 1 CONDITION 1

DROP BACK OF SIDEWALK AS REQUIRED TO PROVIDE MAXIMUM 1:11 RAMP SLOPE. EXTEND RAMP WITHIN SIDEWALK AS REQUIRED. REFER TO CHART ON THIS SHEET.

NOTE:
FOR USE WITH 6" HEADER CURB OR 8" CURB AND GUTTER

<table>
<thead>
<tr>
<th>UTILITY STRIP WIDTH</th>
<th>BACK OF 4&quot; SIDEWALK DROP FROM NORMAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3 1/2&quot;</td>
</tr>
<tr>
<td>2</td>
<td>2&quot;</td>
</tr>
<tr>
<td>3</td>
<td>1 1/2&quot;</td>
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<td>1&quot;</td>
</tr>
<tr>
<td>5</td>
<td>1/2&quot;</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

1 1/2:1 CROSS SLOPE 2 1/4:1 CROSS SLOPE
WHERE ROLL CURB IS USED, "Y" DOES NOT APPLY.

RAMP TYPE 1 CONDITION 2

DROP BACK OF SIDEWALK AS REQUIRED TO PROVIDE MAXIMUM 1:11 RAMP SLOPE. EXTEND RAMP WITHIN SIDEWALK AS REQUIRED. REFER TO CHART ON THIS SHEET.

NORMAL TREATMENT FOR ARTERIALS AND SIGNALIZED INTERSECTIONS

PROFILE RAMP TYPE 1

CROSS SECTION RAMP TYPE 1

DETAIL A

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
**RAMP TYPE 3**

NORMAL TREATMENT FOR SIDEWALK ADJACENT TO CURB

DROP BACK OF SIDEWALK AS REQUIRED TO PROVIDE MAXIMUM 1:11 RAMP SLOPE. EXTEND RAMP WITHIN SIDEWALK AS REQUIRED. REFER TO CHART ON THIS SHEET.

**PROFILE RAMP TYPE 3**

**CROSS SECTION RAMP TYPE 3**

**NOTES:**
1. INLET LOCATIONS WILL VARY, DEPENDENT ON CROSSWALK AND RAMP LOCATION.
2. THE RAMP SHALL BE CONSTRUCTED OF CLASS "A" CONCRETE. STEP-SAFE® TRANSP TRAFFIC INDUSTRIES TILE OR ENGINEER APPROVED EQUIVALENT SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
3. THE NORMAL GUTTER LINE SHOULD BE MAINTAINED THROUGH THE RAMP.
4. RAMPS SHOULD BE LOCATED WITHIN MARKED LIMITS OF CROSSWALKS.

**SHEET NOTES:**

1. MAXIMUM RAMP SLOPE 1:11.
2. 1/2 EXPANSION JOINT AT BACK OF CURB LINE AND SIDEWALK LINE.
3. NO BUMP PERMITTED.
4. SLOPE VARIES UNIFORMLY TO A MAXIMUM OF 1:11. AT GUTTER LINE.

**NOTE:**
FOR USE WITH 6" HEADER CURB OR 6" CURB AND GUTTER

<table>
<thead>
<tr>
<th>SIDEWALK WIDTH</th>
<th>BACK OF SIDEWALK DROP FROM NORMAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>4'</td>
<td>3/4&quot;</td>
</tr>
<tr>
<td>5'</td>
<td>1 1/2&quot;</td>
</tr>
<tr>
<td>6'</td>
<td>2&quot;</td>
</tr>
<tr>
<td>7'</td>
<td>3/4&quot;</td>
</tr>
<tr>
<td>8'</td>
<td>1 1/2&quot;</td>
</tr>
</tbody>
</table>

(1) 1/4":1" CROSS SLOPE

*WHERE ROLL CURB IS USED, "Y" DOES NOT APPLY.*

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LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
4' SIDEWALK ADJACENT TO CURB

RAMP PROFILE

DROP BACK OF WALK 3" --

CONDITION 1

CONDITION 2

DROP BACK OF WALK 3"

4' SIDEWALK ADJACENT TO CURB

RAMP CROSS-SECTION

NOTES:
1. INLET LOCATIONS WILL VARY, DEPENDENT ON CROSSWALK AND RAMP LOCATION
2. THE RAMP SHALL BE CONSTRUCTED OF CLASS "A" CONCRETE, STEP-SAFE® TRANSPOR INDUSTRIES TILE OR ENGINEERS APPROVED EQUIVALENT SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
3. THE NORMAL GUTTER LINE SHOULD BE MAINTAINED THROUGH THE RAMP.
4. RAMPS SHOULD BE LOCATED WITHIN MARKED LIMITS OF CROSSWALKS.

SHEET NOTES:
1. MAXIMUM RAMP SLOPE 1":12.
2. 1/2" EXPANSION JOINT AT BACK OF CURB LINE AND SIDEWALK LINE.
3. NO BUMP PERMITTED.
4. SLOPE VARIES UNIFORMLY TO A MAXIMUM OF 1":12 AT GUTTER LINE.

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LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

DIVISION OF ENGINEERING

SIDEWALK RAMP
TYPE 3
MAXIMUM ALLOWABLE APRON AND DRIVEWAY WIDTHS

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>DRIVEWAY</th>
<th>STANDARD APRON</th>
<th>ALTERNATE APRON</th>
</tr>
</thead>
<tbody>
<tr>
<td>NON-RESIDENTIAL</td>
<td>30'</td>
<td>5° STRAIGHT FLARE=40° CURB CUT</td>
<td>10° RADIAL FLARE=50° CURB CUT</td>
</tr>
<tr>
<td>COMMERCIAL LOADING</td>
<td>30'</td>
<td>15° STRAIGHT FLARE=60° CURB CUT</td>
<td>20° RADIAL FLARE=70° CURB CUT</td>
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<tr>
<td>INDUSTRIAL</td>
<td>40'</td>
<td>20° STRAIGHT FLARE=80° CURB CUT</td>
<td>25° RADIAL FLARE=90° CURB CUT</td>
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</tbody>
</table>

SECTION C–C
FRONT OF SIDEWALK ELEVATION DETERMINED BY ADDING 1/2", 1" ACROSS UTILITY STRIP FROM TOP OF CURB. IF COMING OFF 1/2" UP ADD ANOTHER 1/2" TO DETERMINE ELEVATION AT FRONT OF SIDEWALK.

SECTION A–A
CURB DEPRESSED, FULL WIDTH OF FLARES.

SECTION B–B

SECTION D–D

ENTRANCE WITHOUT UTILITY STRIP

ENTRANCE WITH UTILITY STRIP

NOTES:
1. PROVIDE A SAWED JOINT ALONG CENTER LINE OF APRON.
2. MAXIMUM CROSS SLOPE ON SIDEWALK SHALL NOT EXCEED 1/2":1.
3. MAXIMUM SLOPE ON APRON SHALL NOT EXCEED 1/2":1.
4. NO CATCH BASINS WILL BE PUT IN APRONS.
NOTES:
1. ALL POSTS SHALL BE SET IN CONCRETE TO THE DIMENSIONS AS INDICATED ON THIS DRAWING.
2. 3' HIGH FENCE SHALL HAVE 3' FABRIC HEIGHT. 4' HIGH FENCE SHALL HAVE 4' FABRIC HEIGHT. 5' HIGH FENCE SHALL HAVE 5' FABRIC HEIGHT. 6' HIGH FENCE SHALL HAVE 6' FABRIC HEIGHT.
3. BRACE BANDS SHALL BE 7/8" x 1/8" GALVANIZED STEEL 9/16" x 1/4" CARRIAGE BOLT.
4. POST CAPS AND SOCKET TYPE BRACE END CONNECTIONS SHALL BE GALVANIZED MALLEABLE IRON OR OTHER TYPE AS APPROVED BY THE ENGINEER. THEY SHALL BE DESIGNED IN A MANNER TO EXCLUDE MOISTURE FROM INSIDE POSTS AND RAILS.
5. O.D. DEPICTED FOR TUBULAR POSTS IS NOMINAL--ASTM A-120 SHALL GOVERN.
6. STRUCTURAL SHAPES SHALL CONFORM TO STD. SPEC. 816.07.01 EXCEPT YIELD SHALL BE A MIN. 45,000 P.S.I.
7. INDISCRIMINATE MIXING OF POSTS WILL NOT BE PERMITTED.
8. CHAIN LINK FENCE FABRIC SHALL BE 0.148 INCH NOMINAL DIAMETER (NO. 9 GAGE) WIRE WOVEN IN 2 INCH MESH.

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LEXINGTON--FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
NOTE: All posts shall be set in concrete to the dimensions as indicated on this drawing.

2. A 1 1/4" O.D. at 2.27 Lb. per Ft., or 1 1/2" x 1 1/2" Roll formed section at 1.35 Lb. per Ft. Bottom rail shall be required around all utility installations and at other locations designated by the engineer.

3. 8" High fence shall have 7' fabric height. 9" High fence shall have 8' fabric height. 10" High fence shall be 9' fabric height. 11" High fence shall have 10' fabric height. 12" High fence shall have 11' fabric height.

4. Brace band shall be 7/8" x 1/4" Galvanized steel with 5/16" x 1 1/2" carriage bolts. Post caps and socket type brace end connection shall be Galvanized Malleable iron or other type as approved by the engineer. They shall be designed in a manner to exclude moisture from inside posts and rails.

5. O.D. depicted for tubular posts is nominal. ASTM A-120 shall govern.

6. Chain link fence fabric shall be .148 inch nominal diameter (No. 9 Gage) wire woven in 2 inch mesh.

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LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
LEGEND – (ALTERNATES)

<table>
<thead>
<tr>
<th>TUBULAR</th>
<th>ROLL FORMED</th>
</tr>
</thead>
<tbody>
<tr>
<td>END POST 2½&quot; O.D.</td>
<td>3 ½&quot; x 3 ½&quot;</td>
</tr>
<tr>
<td>END POST 3&quot; O.D.</td>
<td>3 ½&quot; x 3 ½&quot;</td>
</tr>
<tr>
<td>4&quot; O.D.</td>
<td>9 1/2&quot;</td>
</tr>
<tr>
<td>2&quot; O.D.</td>
<td>2 7/8&quot;</td>
</tr>
<tr>
<td>1 1/4&quot; O.D.</td>
<td>2 2/3&quot;</td>
</tr>
<tr>
<td>APPROVED CAPS</td>
<td>NOT REQUIRED</td>
</tr>
<tr>
<td>FLAT STRETCHER BAR</td>
<td>NOT REQUIRED</td>
</tr>
<tr>
<td>BRACE BAND &amp; TENSION BAND</td>
<td>NOT REQUIRED</td>
</tr>
<tr>
<td>BARBED WIRE</td>
<td>BARBED WIRE</td>
</tr>
<tr>
<td>BARBED WIRE ARMS</td>
<td>BARBED WIRE ARMS</td>
</tr>
</tbody>
</table>

NOTES:
1. ALL POSTS SHALL BE SET IN CONCRETE TO THE DIMENSIONS AS INDICATED ON THIS DRAWING.
2. VEHICULAR AND PEDESTRIAN GATES SHALL HAVE HEAVY PRESSURED STEEL CORNERS SECURELY RIVETED OR SHALL BE MACHINE NOTCHED, AND ELECTRICALLY WELDED SO AS TO BE RIGID AND WATER TIGHT; AND EQUIPPED WITH PADLOCKING DEVICE AND GROUND STOP.
3. ALL WELDED JOINTS SHALL BE CLEANED AND PAINTED WITH TWO (2) COATS OF ALUMINUM PAINT.
4. 3' HIGH GATES SHALL HAVE 3' FABRIC HEIGHT. 4' HIGH GATES SHALL HAVE 4' FABRIC HEIGHT. 5' HIGH GATES SHALL HAVE 5' FABRIC HEIGHT. 6' HIGH GATES SHALL HAVE 6' FABRIC HEIGHT. 8' HIGH GATES SHALL HAVE 8' FABRIC HEIGHT. 9' HIGH GATES SHALL HAVE 9' FABRIC HEIGHT. 10' HIGH GATES SHALL HAVE 10' FABRIC HEIGHT. 12' HIGH GATES SHALL HAVE 12' FABRIC HEIGHT.
5. SEE DETAIL "A" FOR BARBED WIRE INSTALLATION ON 8' TO 12' HIGH PEDESTRIAN GATES.
6. SEE DETAIL "B" FOR BARBED WIRE INSTALLATION ON 8' TO 12' HIGH VEHICULAR GATES.
7. THE CONTRACTOR IS NOT TO ORDER GATES UNTIL THEIR NEEDS AND LOCATION HAVE BEEN CERTIFIED BY THE ENGINEER.
8. O.D. DEPICTED FOR TUBULAR POSTS IS NOMINAL – ASTM A-120 SHALL GOVERN.
9. CHAIN LINK FENCE SHALL BE 0.148 INCH NOMINAL DIAMETER (NO.9 GAGE) WIRE WOVEN 2 INCH MESH.

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LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
NOTES:

1. POSTS ARE TO BE DRIVEN 2"-6" INTO GROUND AND TOPS CUT AT AN ANGLE TO DRAIN WATER.

2. FENCE SHALL BE PAINTED BLACK OR WHITE WITH PAINT AND APPLICATION RATE AS APPROVED BY THE ENGINEER.

3. HARDWOODS APPROVED ARE RED OAK, WHITE OAK, AND PINE.
NOTES:
1. WOVEN-WIRE USED FABRIC IN RIGHT-OF-WAY FENCE SHALL BE EITHER ALUMINUM-COATED STEEL NO. 1047-6-9 OR ZINC-COATED STEEL NO. 1047-6-9.
2. ALL FENCE FITTINGS SHALL COMPLY WITH ASTM F 626.
3. O.D. DEPICTED FOR TUBULAR POSTS IS NOMINAL — ASTM F 1083 SHALL GOVERN.
4. STUDDED "T" POST AT 1.33 LBS. PER FOOT.
   — OR —
ROLL FORM POST AT 1.35 LBS. PER FOOT. (SEE DETAIL)
5. NOT REQUIRED FOR ROLL FORM POST.

ROLL FORM POST

PLAN VIEW OF CLIP INSTALLED IN ROLL FORM POST

ISOMETRIC EXPLODED VIEW OF ROLL FORM POST AND CLIPS
CLIPS SHALL BE SPRING STEEL ALUMINUM — FINISHED

LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
NOTES:
1. ON INTERMEDIATE PULL POST ASSEMBLIES, BRACE WIRES SHALL BE REQUIRED FOR BOTH DIRECTIONS.
2. WOVEN-WIRE FABRIC USED IN RIGHT-OF-WAY FENCE SHALL BE EITHER ALUMINUM-COATED STEEL NO. 1047-6-9 OR ZINC-COATED STEEL NO. 1047-6-9.

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
**Basis of Payment:**
The contract unit price for woven wire gates shall be:
1. Feet wide single vehicular woven wire gate
2. Feet wide double vehicular woven wire gate
3. Feet wide pedestrian woven wire gate
   1) = 2) as shown on plans

**Construction Requirements:**
Fabric tie wires shall be spaced 12 inches on centers. The contractor is not to order gates until their necessity and location have been certified by the engineer.

**Materials:**
Woven-wire fabric used in the gates shall either be aluminum-coated steel No. 1047-6-9 or zinc-coated steel No. 1047-6-9.

O.D. depicted for tubular posts is nominal - ASTM F 1083 shall govern.

Gates shall have heavy pressed steel corners securely riveted or shall be machine notched and electrically welded so as to be rigid and water tight. All welded joints shall be cleaned and painted with two (2) coats of aluminum paint.

**General:**
1. 6' to 13' width for single gate and 12' to 26' width for double gate.
2. 4' to 6' width.
LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
NOTES:
1. ALL HANDRAILS SHALL COMPLY WITH THE LATEST EDITION
   OF THE AMERICANS WITH DISABILITIES ACT (ADA) GUIDELINES.
2. ANCHOR POST IN CORED OR FORMED HOLES (SEE DETAIL "A")
3. HANDRAIL SHALL BE REQUIRED WITH THREE OR MORE STEPS.
4. HANDRAIL USED AS A TOP HANDRAIL ON STEPS AND HANDRAIL
   USED ON A RETAINING WALL SHALL BE REQUIRED WHEN THE
   ADJACENT FLOOR, GROUND LEVEL, ROAD, WALK, ETC. IS 4' OR
   MORE BELOW THE TOP OF THE RETAINING WALL. HANDRAIL
   SHALL BE UNFORMLY CONSTRUCTED.
5. THE TOP OF THE RETAINING WALL OR CURB SHALL BE A
   MINIMUM OF 6" ABOVE THE ADJOINING SIDEWALK.
6. RAILS SHALL NOT ROTATE IN FITTINGS AND SHALL HAVE
   WELDED CONNECTIONS.
7. THE CLEAR SPACE BETWEEN HANDRAILS AND WALL SHALL BE 1½".
8. HANDRAILS SHOULD BE CONSTRUCTED OF DN 40 SCHEDULE
   40 ALUMINUM PIPE IN ACCORDANCE WITH ASTM B221 OR B210
   ALLOY 6061-T6.

SHEET NOTE:
1. HANDRAILS SHALL EXTEND 12" BEYOND THE TOP RISER AND
   AT LEAST 12" PLUS THE WIDTH OF ONE TREAD BEYOND THE
   BOTTOM RISER. AT THE TOP, THE EXTENSION SHALL BE
   PARALLEL WITH THE FLOOR OR GROUND SURFACE. AT THE
   BOTTOM, THE HANDRAIL SHALL CONTINUE TO SLOPE FOR
   A DISTANCE OF THE WIDTH OF ONE TREAD FROM THE BOTTOM
   RISER. THE REMAINDER OF THE EXTENSION SHALL BE
   HORIZONTAL.

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LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
DETAIL "A"

4" PAVED SHOULDER
1:1-0" SLOPE

DETAIL "B"

6" DENSE GRADED AGGREGATE
1:1-0" SLOPE

DETAIL "C"

1/4":1-0"
18" MINIMUM EXCAVATED
AND COMPACTED SOIL

PAVED SHOULDER

SURVEY VARIES
GRADE 1/4":1-0"
SEE DETAIL "A"

ROCK SHOULDER

SURVEY VARIES
GRADE 1/4":1-0"
SEE DETAIL "B"

SOIL SHOULDER

SURVEY VARIES
GRADE 1/4":1-0"
SEE DETAIL "C"

NOTES:
1. SLOPES AND DRAINAGE DITCHES OUTSIDE THE R/W SHALL BE
   APPROVED BY THE ENGINEER.
2. DRAINAGE DITCH SIDE SLOPES SHALL BE 2:1 MAXIMUM.
NOTES:
1. ALL SAW-CUTS SHALL BE NEAT AND STRAIGHT.
2. IMMEDIATELY BEFORE LAYING NEW BITUMINOUS COURSES, ALL SAW CUT EDGES SHALL BE CLEANED OF DUST AND DEBRIS AND SPRAYED WITH A BITUMINOUS TACK COAT.
3. EDGE KEYS SHALL NOT BE REQUIRED IF BOTH EXISTING AND NEW PAVEMENT ARE TO RECEIVE AN OVERLAY AS PART OF THIS CONTRACT.

BITUMINOUS PAVEMENT JOINTS

SECTION A-A
LONGITUDINAL EDGE KEY

SECTION B-B
TRANSVERSE EDGE KEY
NOTES:

1. SUBGRADE DRAINAGE, AS DEPICTED, IS INTENDED FOR USE WITH THE SURFACING PHASE OF CONSTRUCTION, AND SHALL BE INSTALLED ONLY AFTER THE SUBGRADE HAS BEEN COMPLETED, AND PRIOR TO CONSTRUCTING PAVING MATERIALS.

2. THE CAP SHALL BE A STANDARD MANUFACTURED ITEM FURNISHED BY THE PIPE SUPPLIER.

3. TERMINATE PERFORATED PIPE IN CATCH BASIN AT AN ELEVATION WHICH PROVIDES POSITIVE DRAINAGE (MAY REQUIRE ADDITIONAL OPENING IN CATCH BASIN WALL).

4. BACKFILL TO CONSIST OF NO. 7B, 8, 9M COARSE AGGREGATE OR NATURAL SAND. THE FILL MATERIAL SHALL BE THOROUGHLY COMPACTED IN LAYERS NOT EXCEEDING 6 INCHES LOOSE MEASUREMENT.

5. CONNECTIONS TO DRAINAGE STRUCTURES AND PIPE TERMINI SHALL BE NON-PERFORATED PIPE MEETING THE REQUIREMENTS OF THE PERFORATED PIPE EXCEPT FOR PERFORATIONS.

6. ALL RAISED NON-PAVED MEDANS SHALL HAVE SUBGRADE DRAINAGE ASSOCIATED WITH CURB AND GUTTER.
CURB ON PAVEMENT

CURB ON SOIL

MEDIAN

TYPICAL SECTION

1. For installation of perforated pipe see Detail Sheet #320
2. Perforated pipe shall completely surround all islands
3. For islands greater than 50" long or wide, perforated pipe surrounding island and leading to the curb inlet shall be 6" diameter.

LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
NOTES:

1. SUBGRADE DRAINAGE, AS DEPICTED, IS INTENDED FOR USE WITH THE ROADWAY CONSTRUCTION PHASE AND SHALL BE INSTALLED ONLY AFTER THE SUBGRADE HAS BEEN COMPLETED, AND PRIOR TO PLACING PAVING MATERIALS.

2. SUBGRADE DRAINAGE WILL NOT BE REQUIRED WHEN:
   A. AGGREGATE SUBGRADE OR NATURAL BANK GRAVEL IS SPECIFIED.
   B. POROUS OR FREE DRAINING SUBGRADES ARE EVIDENT.
   C. DIRECTED BY THE ENGINEER.

3. THE CAP SHALL BE A STANDARD MANUFACTURED ITEM FURNISHED BY THE PIPE SUPPLIER.

4. FLOW SHALL BE DIRECTED TOWARD THE FILL SIDE OF THE ROADWAY WHEN POSSIBLE.

5. IF ROCK IS ENCOUNTERED WITHIN 24" OF SUBGRADE, PERFORATED PIPE IS REQUIRED THE FULL LENGTH OF ROCK. POSITIVE OUTLET IS REQUIRED.

6. A MIN. OF 50' OF PERFORATED PIPE IS REQUIRED UPHILL FROM BASINS ON GRADE AND 25' OF PERFORATED PIPE IS REQUIRED EACH WAY FROM SAG BASINS.

TYPICAL SUBGRADE DRAINAGE LOCATIONS

—LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT—
1. UNDERDRAINS WILL BE REQUIRED ON UPGRADE BENCH. THIS PERFORATED PIPE UNDERDRAIN SHOULD BE PLACED IN ROCK OR SHALE FORMATIONS IF POSSIBLE. EXACT LOCATIONS TO BE DETERMINED BY THE ENGINEER ON CONSTRUCTION.

2. BENCHING AND UNDERDRAIN SHALL BE REQUIRED AT ALL TRANSITIONS FROM ROCK CUTS TO FILL WHETHER OR NOT UNDERDRAIN IS REQUIRED.

3. IF ROCK IS ENCOUNTERED WITHIN 24" OF SUBGRADE, PERFORATED PIPE IS REQUIRED THE FULL LENGTH OF ROCK. POSITIVE OUTLET IS REQUIRED.

DETAIL 1

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT
LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT

PROJECT TITLE XXXXXXX
PROJECT COST $XXXXXXX
CONTRACT NO. XXXXXXX

LOCATION MAP

MAYOR'S NAME
URBAN COUNTY COUNCIL
DEPARTMENT OF PUBLIC WORKS,
DIVISION OF ENGINEERING

NOTES:

THIS SIGN SHALL BE:
1. FURNISHED AND ERECTED BY THE CONTRACTOR AT THE CONTRACTOR’S EXPENSE, IN ADDITION TO THE NORMAL WARNING AND REGULATORY SIGNS.
2. OF GOOD QUALITY EXTERIOR PLYWOOD OR OTHER APPROVED MATERIAL.
3. PAINTED WITH SOLID BLUE LETTERS ON A WHITE BACKGROUND.
4. UPDATED AS NEEDED TO INDICATE THE APPROPRIATE MAYOR'S NAME.
5. FRAMED AND BRACED SO AS TO REMAIN VERTICAL AND PLAINLY VISIBLE TO THE TRAVELING PUBLIC.
6. ERECTED PRIOR TO STARTING CONSTRUCTION WORK.
7. ERECTED AT EACH END OF THE PROJECT AT LOCATIONS DIRECTED BY THE ENGINEER AND AT OTHER LOCATIONS SPECIFIED ON THE PLANS OR IN THE PROPOSAL.
8. KEPT CLEAN AND IN GOOD CONDITION FOR THE DURATION OF THE CONSTRUCTION AS DIRECTED BY THE ENGINEER.
9. THE COST SHOWN APPLIES ONLY TO THE PORTION OF PROJECT UNDER CONSTRUCTION IN A CONTINUOUS SECTION. IN THE EVENT THE PROJECT CONSISTS OF MORE THAN ONE CONTINUOUS SECTION THE COST SHOWN SHALL BE FOR THE PARTICULAR SECTION WHERE WORK IS IN PROGRESS.

LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT