September 22, 2017

Users of Lexington – Fayette Urban County Engineering Standard Drawings

Re: Standard Drawings 2017

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

These drawings become effective as of September 22, 2017 and any projects 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,

W. Douglas Burton, P.E.
Urban County Engineer

WDB;MHF
<table>
<thead>
<tr>
<th>Drawing No.</th>
<th>Drawing Title</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Manholes-Storm Drainage:</strong></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>Storm Sewer Manhole Type &quot;A&quot; - Circular Walls</td>
</tr>
<tr>
<td>101</td>
<td>Storm Sewer Manhole Type &quot;B&quot; - Non-Circular Walls</td>
</tr>
<tr>
<td>102</td>
<td>Storm Sewer Manhole Details</td>
</tr>
<tr>
<td>103</td>
<td>Manhole Frames, Covers and Steps</td>
</tr>
<tr>
<td>104</td>
<td>Storm Sewer Manhole Circular Slabs 4'-0&quot; and 5'-0&quot; Diameter</td>
</tr>
<tr>
<td>105</td>
<td>Storm Sewer Manhole Circular Slabs 6'-0&quot; Diameter</td>
</tr>
<tr>
<td>106</td>
<td>Storm Sewer Manhole Circular Slabs 7'-0&quot; Diameter</td>
</tr>
<tr>
<td>107</td>
<td>Storm Sewer Manhole Circular Slabs 8'-0&quot; Diameter</td>
</tr>
<tr>
<td>108</td>
<td>Reinforcement Detail 5' Non-Circular M.H. Less Than 10' Depth, 8&quot; Walls, 10&quot; Slab</td>
</tr>
<tr>
<td>109</td>
<td>Reinforcement Detail 5' Non-Circular M.H. 7'-6&quot; to 20' Depth, 8&quot; Walls, 12&quot; Slab</td>
</tr>
<tr>
<td>110</td>
<td>Reinforcement Detail 6' Non-Circular M.H. Less Than 10' Depth, 8&quot; Walls, 10&quot; Slab</td>
</tr>
<tr>
<td>111</td>
<td>Reinforcement Detail 6' Non-Circular M.H. 8' to 15' Depth, 8&quot; Walls, 12&quot; Slab</td>
</tr>
<tr>
<td>112</td>
<td>Reinforcement Detail 6' Non-Circular M.H. 15' to 20' Depth, 10&quot; Walls, 12&quot; Slab</td>
</tr>
<tr>
<td>113</td>
<td>Reinforcement Detail 7' Non-Circular M.H. Less Than 10' Depth, 8&quot; Walls, 10&quot; Slab</td>
</tr>
<tr>
<td>114</td>
<td>Reinforcement Detail 7' Non-Circular M.H. 8' to 10' Depth, 8&quot; Walls, 12&quot; Slab</td>
</tr>
<tr>
<td>115</td>
<td>Reinforcement Detail 7' Non-Circular M.H. 10' to 20' Depth, 10&quot; Walls, 12&quot; Slab</td>
</tr>
<tr>
<td>116-119</td>
<td>(Future)</td>
</tr>
<tr>
<td><strong>Surface Inlets &amp; Catch Basins:</strong></td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>Surface Inlet Type &quot;A&quot;</td>
</tr>
<tr>
<td>121</td>
<td>Surface Inlet Type &quot;B&quot;</td>
</tr>
<tr>
<td>122-1</td>
<td>Curb Box Inlet Type &quot;A&quot; 4' x 4' Box 15&quot; - 18&quot; Pipes</td>
</tr>
<tr>
<td>122-2</td>
<td>Curb Box Inlet Type &quot;A&quot; 4' x 4' Box 15&quot; - 18&quot; Pipes</td>
</tr>
<tr>
<td>123-1</td>
<td>Curb Box Inlet Type &quot;B&quot; 5' x 5' Box 15&quot; - 24&quot; Pipes</td>
</tr>
<tr>
<td>123-2</td>
<td>Curb Box Inlet Type &quot;B&quot; 5' x 5' Box 15&quot; - 24&quot; Pipes</td>
</tr>
<tr>
<td>124-1</td>
<td>Curb Box Inlet Type &quot;C&quot; 4' x 3' Box Single Pipe 15&quot; or Less</td>
</tr>
<tr>
<td>124-2</td>
<td>Curb Box Inlet Type &quot;C&quot; 4' x 3' Box Single Pipe 15&quot; or Less</td>
</tr>
<tr>
<td>125</td>
<td>Curb Box Inlet Type &quot;D&quot;</td>
</tr>
<tr>
<td>126</td>
<td>Spring Box Inlet Type &quot;A&quot;</td>
</tr>
<tr>
<td>127</td>
<td>Spring Box Inlet Type &quot;B&quot;</td>
</tr>
</tbody>
</table>
## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Drawing No.</th>
<th>Drawing Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>128</td>
<td>Security Devices for Frames and Grates</td>
</tr>
<tr>
<td>129</td>
<td>(Future)</td>
</tr>
<tr>
<td><strong>Channels &amp; Ditches:</strong></td>
<td></td>
</tr>
<tr>
<td>130-1</td>
<td>Aggregate Channel Lining</td>
</tr>
<tr>
<td>130-2</td>
<td>Aggregate Channel Lining</td>
</tr>
<tr>
<td>131</td>
<td>Mattress Channel Lining</td>
</tr>
<tr>
<td>132</td>
<td>Paved Ditch</td>
</tr>
<tr>
<td>133-139</td>
<td>(Future)</td>
</tr>
<tr>
<td><strong>Roadway Drainage:</strong></td>
<td></td>
</tr>
<tr>
<td>140-149</td>
<td>(Future)</td>
</tr>
<tr>
<td><strong>Headwalls:</strong></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>Straight Headwalls</td>
</tr>
<tr>
<td>151</td>
<td>ELL Headwalls</td>
</tr>
<tr>
<td>152</td>
<td>U-Type Headwalls</td>
</tr>
<tr>
<td>153</td>
<td>Pipe Culvert Headwalls 0° Skew 15&quot; - 27&quot; Circular Pipe</td>
</tr>
<tr>
<td>154-1</td>
<td>Pipe Culvert Headwalls 0° Skew 30&quot; - 108&quot; Pipe</td>
</tr>
<tr>
<td>154-2</td>
<td>Dimensions and Quantities 30&quot; - 108&quot; Headwalls Circular Pipe 0° Skew</td>
</tr>
<tr>
<td>154-3</td>
<td>Bill of Reinforcement 30&quot; - 90&quot; Diameter Circular Pipe Headwalls 0° Skew</td>
</tr>
<tr>
<td>154-4</td>
<td>Bill of Reinforcement 96&quot; - 108&quot; Diameter Circular Pipe Headwalls 0° Skew</td>
</tr>
<tr>
<td>158</td>
<td>18&quot; - 24&quot; Double &amp; Triple Pipe Culvert Headwalls at 0° Skew</td>
</tr>
<tr>
<td>159-1</td>
<td>Double and Triple Pipe Culvert Headwalls 0° Skew</td>
</tr>
<tr>
<td>159-2</td>
<td>Dimensions and Quantities 30&quot; - 48&quot; Double and Triple Headwalls - Circular Pipe 0° Skew</td>
</tr>
<tr>
<td>159-3</td>
<td>Bill of Reinforcement 30&quot; - 48&quot; Double and Triple Headwalls - Circular Pipe 0° Skew</td>
</tr>
<tr>
<td>162</td>
<td>Sloped and Flared Box Inlet - Outlet 18&quot; - 24&quot; - 30&quot; - 36&quot; All Skews</td>
</tr>
<tr>
<td>163</td>
<td>Grates for Sloped and Flared Box Inlet - Outlet</td>
</tr>
<tr>
<td>164</td>
<td>Impact Stilling Basin 15&quot; - 24&quot; Pipes</td>
</tr>
<tr>
<td>165</td>
<td>Impact Stilling Basin 27&quot; - 48&quot; Pipes</td>
</tr>
<tr>
<td>166-169</td>
<td>(Future)</td>
</tr>
</tbody>
</table>

**Silt & Erosion Control:**

See Chapter 11 of *LFUCG Stormwater Manual* for Approved Design Details
## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Drawing No.</th>
<th>Drawing Title</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Retaining Structures:</strong></td>
<td></td>
</tr>
<tr>
<td>180</td>
<td>Retaining Wall Gravity Type</td>
</tr>
<tr>
<td>181-189</td>
<td>(Future)</td>
</tr>
<tr>
<td><strong>Trenching:</strong></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>Trenching, Laying, Backfilling and Bedding Outside R/W Limits</td>
</tr>
<tr>
<td>201-1</td>
<td>Trenching, Laying, Backfilling and Bedding Under Street Pavement</td>
</tr>
<tr>
<td>201-2</td>
<td>Trenching, Laying, Backfilling and Bedding Under Street Pavement Using Flowable Fill</td>
</tr>
<tr>
<td>201-3</td>
<td>Utility Trench Restoration Beneath Existing Paved Roads (Section View)</td>
</tr>
<tr>
<td>201-4</td>
<td>Utility Trench Restoration Beneath Existing Paved Roads (Plan View)</td>
</tr>
<tr>
<td>204</td>
<td>Sanitary Sewer Pipe: Types and Maximum Allowable Fill Heights</td>
</tr>
<tr>
<td>206-209</td>
<td>(Future)</td>
</tr>
<tr>
<td><strong>Manholes-Sanitary:</strong></td>
<td></td>
</tr>
<tr>
<td>210</td>
<td>Typical Precast Concrete Shallow Manhole Pipes 24&quot; and Larger</td>
</tr>
<tr>
<td>211</td>
<td>Typical Standard Precast Concrete Manhole Pipes Up To 24&quot;</td>
</tr>
<tr>
<td>212</td>
<td>Typical Precast Concrete Drop Manhole Pipes Up To 36&quot;</td>
</tr>
<tr>
<td>213</td>
<td>Standard Manhole Junction and Water Stop Details</td>
</tr>
<tr>
<td>214</td>
<td>Sewer Manhole Adjustment Grade Rings</td>
</tr>
<tr>
<td>216</td>
<td>Manhole Size Standards and General Notes for Deep Manholes</td>
</tr>
<tr>
<td>217</td>
<td>Deflection Angle Criteria for Sanitary Manholes</td>
</tr>
<tr>
<td>220</td>
<td>Standard Circular Manhole Frame and Cover</td>
</tr>
<tr>
<td>222</td>
<td>Standard Watertight Manhole Frame and Cover</td>
</tr>
<tr>
<td>223-229</td>
<td>(Future)</td>
</tr>
<tr>
<td><strong>Connections:</strong></td>
<td></td>
</tr>
<tr>
<td>230</td>
<td>House Lateral for Greater than 6’ Deep Sewer in Soil and Rock Excavation</td>
</tr>
<tr>
<td>231</td>
<td>House Lateral for Greater than 6’ Deep Sewer in Soil</td>
</tr>
<tr>
<td>232</td>
<td>House Lateral for Shallow Sewer in Soil or Rock</td>
</tr>
<tr>
<td>233</td>
<td>Lateral Cleanout in Non-Paved Areas and Yards</td>
</tr>
<tr>
<td>234</td>
<td>Right-Of-Way Easement Lateral Cleanout in Non-Paved Areas and Yards</td>
</tr>
<tr>
<td>240</td>
<td>Sanitary Sewer Stream Crossing and Stream Bed Restoration Detail</td>
</tr>
<tr>
<td>250</td>
<td>Grease Interceptor Typical Configuration</td>
</tr>
</tbody>
</table>
## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Drawing No.</th>
<th>Drawing Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>260</td>
<td>Sewer Connection to Existing Concrete Manhole</td>
</tr>
<tr>
<td>261-269</td>
<td>(Future)</td>
</tr>
<tr>
<td></td>
<td><strong>Streets &amp; Roads:</strong></td>
</tr>
<tr>
<td>300</td>
<td>Typical Street Sections</td>
</tr>
<tr>
<td>301</td>
<td>Curb and Gutter</td>
</tr>
<tr>
<td>302</td>
<td>Integral Curb, Header Curb, Monolithic Curb and Sidewalk</td>
</tr>
<tr>
<td>303</td>
<td>Sidewalk Construction Specifications</td>
</tr>
<tr>
<td>304</td>
<td>Sidewalk Ramp Type 1</td>
</tr>
<tr>
<td>305</td>
<td>(Future)</td>
</tr>
<tr>
<td>306</td>
<td>(Future)</td>
</tr>
<tr>
<td>307-1</td>
<td>Residential Entrance Details</td>
</tr>
<tr>
<td>307-2</td>
<td>Commercial Entrance Details</td>
</tr>
<tr>
<td>308</td>
<td>Chain Link Fence 3' - 6'</td>
</tr>
<tr>
<td>309</td>
<td>Chain Link Fence 8' - 12'</td>
</tr>
<tr>
<td>310</td>
<td>Chain Link Gate</td>
</tr>
<tr>
<td>311</td>
<td>Plank Fence</td>
</tr>
<tr>
<td>312</td>
<td>Woven Wire Right-of-Way Fence Type 1</td>
</tr>
<tr>
<td>313</td>
<td>Woven Wire Right-of-Way Fence Type 2</td>
</tr>
<tr>
<td>314</td>
<td>Woven Wire Gates</td>
</tr>
<tr>
<td>315</td>
<td>Concrete Steps</td>
</tr>
<tr>
<td>316</td>
<td>Top Rail for Retaining Walls Handrail for Steps</td>
</tr>
<tr>
<td>317</td>
<td>County Road Typical Shoulder Sections (Minimum Requirements)</td>
</tr>
<tr>
<td>318</td>
<td>Edge Key</td>
</tr>
<tr>
<td>319</td>
<td>Typical Edge Key for Minimum Overlays, Short Projects, Low Speed</td>
</tr>
<tr>
<td>320-1</td>
<td>Perforated Pipe Subgrade Drainage Along Roadway</td>
</tr>
<tr>
<td>320-2</td>
<td>Perforated Pipe Subgrade Drainage For Raised Non-Paved Medians</td>
</tr>
<tr>
<td>321</td>
<td>Perforated Pipe for Subgrade Drainage</td>
</tr>
<tr>
<td>322</td>
<td>Perforated Pipe Underdrains</td>
</tr>
<tr>
<td>323</td>
<td>Public Improvement Sign</td>
</tr>
<tr>
<td>324-330</td>
<td>(Future)</td>
</tr>
</tbody>
</table>
TABLE I
OF MINIMUM PARTIAL ANGLE

<table>
<thead>
<tr>
<th>MANHOLE SIZE</th>
<th>A - D</th>
<th>B - D</th>
<th>C - D</th>
<th>D - D</th>
<th>E - D</th>
<th>F - D</th>
<th>G - D</th>
<th>H - D</th>
</tr>
</thead>
<tbody>
<tr>
<td>36&quot;</td>
<td>36&quot;</td>
<td>36&quot;</td>
<td>36&quot;</td>
<td>36&quot;</td>
<td>36&quot;</td>
<td>36&quot;</td>
<td>36&quot;</td>
<td>36&quot;</td>
</tr>
<tr>
<td>30&quot;</td>
<td>30&quot;</td>
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<td>30&quot;</td>
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<td>30&quot;</td>
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<tr>
<td>24&quot;</td>
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<td>18&quot;</td>
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<td>18&quot;</td>
<td>18&quot;</td>
<td>18&quot;</td>
<td>18&quot;</td>
<td>18&quot;</td>
</tr>
</tbody>
</table>

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 MANHOLE SHALL BE SPECIALLY DESIGNED WITH REGARD TO AREA, THICKNESS, AND REINFORCING IN SITUATIONS WHERE HIGH WATER TABLE OR UNSTABLE SOIL CONDITIONS EXIST.
5. MANHOLE RENCH SHALL SLOPE AT LEAST 1" PER FT. FROM WALLS TO CHANNELS AND SHALL HAVE SMOOTH FLOAT AND BRUSH FINISH.
6. ELEVATIONS OF PIPES IN MANHOLE 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-76 CLASS III GREATER THAN 12' DEPTH.
2. BASE SECTION OF CIRCULAR MANHOLES MAY BE CAST-IN-PLACE CONCRETE OR CUSTOM PRECAST CONCRETE 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 (E.G. 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, LARGER 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 10° FOR PIPES UP TO 24" IN DIAMETER. THE MAXIMUM DEFLECTION ANGLE FOR 27" TO 42" PIPES SHALL BE 70° 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 70° 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 28° AND FOR A 30" PIPE IS 40°. THE SUM OF THE PARTIAL ANGLES IS 68°, THIS SUM IS LESS THAN THE 70°. THEREFORE, A 6"-0" MANHOLE DIAMETER IS ACCEPTABLE.
**Type "B" Manhole - Non-Circular Walls, Cast-In-Place Concrete**

**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 pipe.
8. Influent pipes may enter manholes at an elevation above the channels as required to avoid conflict with larger pipes in the manhole.

**Storm Sewer Manhole Type "B" - Non-Circular Walls**

**Concrete Walls**

- **Pipe Size ("A")**
  - 12" to 18"
  - 24" to 30"
  - 36" to 42"
  - 48" to 60"

- **Defl. Angle**
  - 90°

**Concrete Walls for Reinforcing See Std. DWGS. 108 - 115**
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”
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 POLYPROPYLENE PLASTIC COATED STEEL ROD OR OF A TYPE AND SIZE APPROVED BY THE ENGINEER.
2. STEPS SHALL BE SPACED 12" 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 12" - 18" FROM TOP OF PRECAST CONE SECTION, AND SHALL BE VERTICALLY LOCATED TO MAXIMIZE THE DISTANCE OF ANY STEP FROM THE JOINT OF A MANHOLE SECTION.
**4'-0" DIA. SHALLOW MANHOLES**

**SIDE VIEW**

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

**5'-0" DIA. SHALLOW MANHOLES**

**SIDE VIEW**

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

**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**

**SPECIAL BAR BENDS**

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

**LEXINGTON**

**DIVISION OF ENGINEERING**

**STORM SEWER MANHOLE CIRCULAR SLABS 6'-0" DIAMETER**

LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT
7'-0" DIA.  
STANDARD MANHOLES

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

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.

SIDE VIEW

7'-0" DIA.  
SHALLOW MANHOLES

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

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.

SIDE VIEW

SPECIAL BAR BENDS

NOTE:
SLAB OUTER DIAMETER TO VARY WITH MANHOLE WALL THICKNESS, TO COMPLETELY COVER MANHOLE WALLS.
8'-0" DIA.
STANDARD MANHOLE

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.

LEXINGTON - FAYETTE URBAN COUNTY GOVERNMENT
**SPECIAL BAR BENDS**

**MARK NO.** | **SIZE** | **LENGTH** | **TYPE**  
--- | --- | --- | ---  
1 | 1 | 6" | 8"-6"  
2 | 12 | 5 | 6"-0" STR.  
3 | 4 | 5 | 3"-8"  
4 | 2 | 5 | 3"-4"  

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

---

**HORIZ. SECTION**

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

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

**MARK NO. SIZE LENGTH TYPE**
8 * 4 6-0° STR.

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

**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 THE TITLE ARE MEASURED FROM SURFACE TO M.H. INVERT.
SPECIAL BAR BENDS

### TOP SLAB
2'-0" OPENING

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<td>2</td>
<td>14</td>
<td>5</td>
<td>7'-0&quot;</td>
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</tr>
<tr>
<td>3</td>
<td>4</td>
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<td>4'-8&quot;</td>
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<td>4</td>
<td>2</td>
<td>5</td>
<td>4'-4&quot;</td>
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</table>

**MARK NO. SIZE LENGTH TYPE**

- MAX. WIRE 4" OD. B.
- MIN. WIRE 4" OD. B.
- 1" MK7.7-@12" O.C. 1'-0"
- 11" MK7.7-@12" O.C. 1'-0"

**VERT. SECTION**

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

**BOTTOM SLAB**

<table>
<thead>
<tr>
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<td>STR.</td>
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**HORIZ. SECTION**

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<td>20</td>
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</table>

**MARK NO. SIZE LENGTH TYPE**

- 14" MK6.5-@15" O.C. 1'-0"
- 14" MK6.5-@15" O.C. 1'-0"
- 14" MK6.5-@15" O.C. 1'-0"

**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'-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" | "

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

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

**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.
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

TYPE A

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

TOP SLAB
2'-0" OPENING

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

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

VERT. SECTION

MARK NO. | SIZE | LENGTH | TYPE
---------|------|--------|------
6        | 20   | 4      | 9'-0" | STR.

BOTTOM SLAB

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.

LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT
SPECIAL BAR BENDS

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

MARK NO. SIZE LENGTH TYPE
9  24  4  DIM. "H"-2"  STR.

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

**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 20 5 8'-4" STR.
3 4 5 4'-3" "
4 4 5 3'-9" 
5 4 5 3'-7" "
6 4 5 3'-6" "
7 6 5 1'-2" "

**TYPE A**

**TYPE C**

**MARK NO. SIZE LENGTH TYPE**
8 *: 5 10'-0" C
9 *: 4 8'-4" STR.

*1 4 X (WALL HEIGHT (INCH)/10)
*2 4 X (WALL HEIGHT (INCH)/12)
(ROUNDED UP TO THE NEXT WHOLE NUMBER)

**HORIZ. SECTION**

**MARK NO. SIZE LENGTH TYPE**
10 44 4 DIM. H'-2" STR.

**VERT. SECTION**

**MARK NO. SIZE LENGTH TYPE**
11 20 4 9'-4" STR.

**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.
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. ONLY STRAIGHT THROUGH CONNECTIONS ARE ALLOWED.
### Bill of Reinforcement

<table>
<thead>
<tr>
<th>MARK</th>
<th>1/4 SECTION</th>
<th>LOCATION</th>
<th>a</th>
<th>b</th>
<th>c</th>
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<tr>
<td>A1</td>
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<td>4</td>
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<tr>
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<tr>
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<tr>
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<tr>
<td>A7</td>
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<td>#5 4</td>
<td>THROAT</td>
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<td>A14</td>
<td>#5 11</td>
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<td>6</td>
</tr>
<tr>
<td>A15</td>
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<td>END THROAT</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

* 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.
2. Steel reinforcement shall be ASTM A-615, Grade 60. All exposed edges shall be beveled 1/4" unless otherwise shown.
3. This drawing depicts a curb box inlet in a grade situation. For curb box box in sag situation, details shall be modified as indicated in detail A.
4. 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.
5. Maximum "H" for application of this drawing shall be 10 feet.
6. Field bend or cut bars A2, A4, and A5 as necessary where pipes penetrate chamber walls.
7. For curb box inlet in curve with curb radius of less than 25', longitudinal bars A9, A10 shall be shop fabricated radially.

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**LEXINGTON – FAYETTE URBAN COUNTY GOVERNMENT**

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**LEXINGTON DIVISION OF ENGINEERING**

**CURB BOX INLET TYPE "A"**

**4’X4’ BOX**

**15’−18’ PIPES**

**STANDARD DRAWING NO:** 122−2

**APPROVAL:**

**CONTRACT ENGINEER:**

**DATE:** 4/24/17

---
**BILL OF REINFORCEMENT**

<table>
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<th>Part</th>
<th>Mark</th>
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<th>Length</th>
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<th>b</th>
<th>c</th>
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<td>H(4&quot;)</td>
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<td>B8</td>
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<td>H(1'-10&quot;)</td>
<td></td>
</tr>
<tr>
<td>B11</td>
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<td>4</td>
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<td>0</td>
<td>H(1'-10&quot;)</td>
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<tr>
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<td>0</td>
<td>H(1'-10&quot;)</td>
<td></td>
</tr>
</tbody>
</table>

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

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**BAR TYPES**

<table>
<thead>
<tr>
<th>Type</th>
<th>Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE 1</td>
<td><img src="image1" alt="Type 1 Diagram" /></td>
</tr>
<tr>
<td>TYPE 2</td>
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</tr>
<tr>
<td>TYPE 5</td>
<td><img src="image5" alt="Type 5 Diagram" /></td>
</tr>
</tbody>
</table>

---

**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 RADIIALLY.

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

---

**LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT**

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**LEXINGTON DIVISION OF ENGINEERING**

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

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**LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT**
### BILL OF REINFORCEMENT

<table>
<thead>
<tr>
<th>MARK</th>
<th>W</th>
<th>H</th>
<th>D</th>
<th>3/4</th>
<th>LENGTH</th>
<th>LOCATION</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
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<tbody>
<tr>
<td>C1</td>
<td>#5</td>
<td>7</td>
<td>4</td>
<td>2</td>
<td>FOOTING</td>
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<td>0</td>
<td>H+10&quot;</td>
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</tr>
<tr>
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<td>#5</td>
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<td>3</td>
<td>2</td>
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<td>H-(1&quot;-4&quot;)</td>
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</tr>
<tr>
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<td>#5</td>
<td>9</td>
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</tr>
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<td>C4</td>
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<td>5</td>
<td>H-4&quot;</td>
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<td>H-(1&quot;-4&quot;)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>C5</td>
<td>#5</td>
<td>4</td>
<td>H+(2&quot;-4&quot;)</td>
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<td>0</td>
<td>H+10&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C6</td>
<td>#5</td>
<td>7&quot;</td>
<td>2</td>
<td>8</td>
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<td>H-10&quot;</td>
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<td>2</td>
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<td>CORNERS</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>C9</td>
<td>#5</td>
<td>1&quot;</td>
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<td>4</td>
</tr>
<tr>
<td>C10</td>
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<td>10</td>
<td>8</td>
<td>THROAT &amp; APRON</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>9</td>
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</tr>
<tr>
<td>C11</td>
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<td>5</td>
<td>7</td>
<td>7</td>
<td>TOP SLAB</td>
<td>TOP SLAB</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>C12</td>
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<td>5</td>
<td>7</td>
<td>2</td>
<td>THROAT</td>
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<td>9</td>
</tr>
<tr>
<td>C13</td>
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<td>END THROAT</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>C14</td>
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<td>4</td>
<td>5</td>
<td>7</td>
<td>THROAT &amp; APRON</td>
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<td>4</td>
<td>0</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>C15</td>
<td>#5</td>
<td>14</td>
<td>4</td>
<td>5</td>
<td>THROAT</td>
<td>THROAT</td>
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<td>4</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
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<td>1</td>
<td>END THROAT</td>
<td>END THROAT</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>9</td>
</tr>
</tbody>
</table>

* NO. OF BARS REQUIRED FOR H=4"-0"
ADD OR DEDUCT 2-C6, 2-C7 & 4-C8 FOR EACH 1'-0" INCREASE OR DECREASE IN H.

#### BAR TYPES

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

#### 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 REVELED ¾" 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 PENE TranSM IVE
   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 RADICALLY.

**LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT**

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**LEXINGTON DIVISION OF ENGINEERING**

**CURB BOX INLET TYPE "C"**
4"X3" BOX
SINGLE PIPE
15" OR LESS

**STANDARD DRAWING NO.** 124-2

**APPROVED** 4/14/17

**COMPLETED** 9/24/17

---

**LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT**
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 PLATWORK 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 M6 GRATE OR EQUIVALENT.

9. TOP OF CURB SECTION SHALL BE CAST WITH "DUMP NO WASTE DRAINS TO STREAM".

SECTION C-C

SECTION D-D
**BILL OF REINFORCEMENT**

<table>
<thead>
<tr>
<th>MARK</th>
<th>QUANTITY</th>
<th>SIZE</th>
<th>LENGTH</th>
<th>LOCATION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
<td>1/2&quot;Ø</td>
<td>4'-7&quot;</td>
<td>TOP SLAB</td>
<td>STRAIGHT</td>
</tr>
<tr>
<td>C</td>
<td>6</td>
<td>-</td>
<td>9'-9&quot;</td>
<td>WALL</td>
<td>BENT</td>
</tr>
<tr>
<td>D</td>
<td>16</td>
<td>-</td>
<td>3'-4&quot;</td>
<td>-</td>
<td>STRAIGHT</td>
</tr>
</tbody>
</table>

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.

**LEXINGTON**

**DIVISION OF ENGINEERING**

**SPRING BOX INLET TYPE "A"**

LEXINGTON – FAYETTE URBAN COUNTY GOVERNMENT
NOTES:
1. SPRING BOX INLET TYPE "B" MAY BE USED WHEN FILL OVER TOP IS LESS THAN 10'.
   ○ 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

<table>
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<tr>
<th>MARK</th>
<th>QUANTITY</th>
<th>SIZE</th>
<th>LENGTH</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>4</td>
<td>NO.3</td>
<td>1'–0&quot;</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>&quot;</td>
<td>2'–5&quot;</td>
</tr>
<tr>
<td>C</td>
<td>4</td>
<td>&quot;</td>
<td>3'–0&quot;</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>&quot;</td>
<td>3'–2&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARK</th>
<th>LOCATION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>TOP</td>
<td>STRAIGHT</td>
</tr>
<tr>
<td>B</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>C</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>D</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

36" R.C. PIPE
CLASS III

PRECAST REINFORCED CONCRETE COVER
CLASS "A"

4" TILE WHERE NEEDED
BACKFILL WITH COARSE AGGREGATE
USED IN CLASS "A" CONCRETE.
TYPICAL ILLUSTRATIONS FOR CASTINGS

1. CHAIN SHACKLE, OR COLD SHUT OF AN APPROVED TYPE.
2. 3/4" 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.
   3/8" DIA. HOLE FOR CAP SCREW. BATTER THREADS ON CAP SCREW TO PREVENT REMOVAL OF NUT.
5. 3/8" EYE BOLT (LENGTH DETERMINED BY THE FRAME DIMENSION).
6. ALL EYE BOLTS SHALL HAVE A CONTINUOUS OR SPOD 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.

TYPICAL ILLUSTRATIONS FOR STRUCTURAL STEEL UNITS
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/SQ. 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):

1.) \[ \frac{D}{(\text{particle diameter})} \times 85 \text{ base (mm)} > 1 \]

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>
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</tr>
<tr>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>14</td>
</tr>
</tbody>
</table>

SEE SHEET 130-1 FOR AGGREGATE CHANNEL LINING MATERIAL DRAWINGS
**NOTES:**

1.ANCHORS REQUIRED WHEN LINING IS PLACED ON 5% GRADE OR GREATER.

2. SECURE THE LACING WIRE AT THE CORNER OF THE BASKET BY LOOPING 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".

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

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

5. 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.
Note:
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°.
PLAN ELEVATION

SEE NOTES ④ & ⑤

SOIL SLOPE

SOIL SLOPE

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>
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<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>
</tr>
<tr>
<td></td>
<td>18&quot;</td>
<td>1'9&quot;</td>
<td>1'3&quot;</td>
<td>4'6&quot;</td>
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<td>4'3&quot;</td>
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<td>3'0&quot;</td>
<td>5'9&quot;</td>
</tr>
<tr>
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<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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<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>
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<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>
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NOTES:

① HEIGHT OF FOOTER SHALL BE 18" FOR SOIL AND 12" IN ROCK.

② ALL EXPOSED EDGES TO BE CHAMFERED 1/4".

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".
SHEET NOTE:
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°.

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<td>4'--6'</td>
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<td>D</td>
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<td>F</td>
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</tr>
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<td>C.Y. CONC.</td>
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LEXINGTON  
DIVISION OF ENGINEERING  

U-TYPE HEADWALLS  

LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT
**PIPE Culvert Headwalls**

- **0° Skew**
- 15"—27" Circular Pipe

**Sheet Notes:**

1. 6 #4 x 1' - 0" Dowels
2. 4 #4 x (E" Dimension minus 4")
3. Slope shall be warped to fit headwall when pipe is skewed and/or normal slope varies from 2:1.

**Notes:**

1. Reinforcing Steel minimum grade 40, evenly spaced (min. spacing 12" O.C.)
2. Volume displaced by pipe computed using inside diameter of pipe.
3. Wing angles and/or dimensions may be altered during construction to accommodate flow of water.
4. Apron between wings shall be sloped in direction of flow equal to slope of pipe, but not to exceed 5%. Front face of headwall shall remain vertical.
5. Chain link fence is required on all headwalls when vertical face "C" is greater than 30°.
6. All exposed edges are to have 3/4" chamfer.
7. Skewed pipe requires special design.

**Dimensions Table:**

<table>
<thead>
<tr>
<th>PIPE Dia.</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>F</th>
<th>L</th>
<th>W</th>
<th>T</th>
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**Lexington - Fayette Urban County Government**
WING SECTION
30°-60° CIRCULAR PIPE

PLAN VIEW

SECTION A-A

FRONT ELEVATION

SECTION B-B

NOTES:
1. APPLIES TO 66" DIAMETER AND GREATER (CIRCULAR PIPE)
2. SEE SHEETS 2, 3, AND 4 OF CURRENT STD. DWG. 154 FOR DIMENSIONS, QUANTITIES, AND BILL OF REINFORCEMENT.
3. DIMENSIONS FROM FACE OF CONCRETE TO STEEL SHALL BE 2" CLEAR DISTANCE UNLESS OTHERWISE NOTED.
4. ENCIRCLED LETTERS . INDICATE STEEL BAR LOCATIONS.
5. BARS . ARE SPACED 1'-0" O.C. ALL OTHER BARS SHALL BE EVENLY SPACED.
6. BARS AND ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT THE END OF EACH WING.
7. BARS ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT TOP OF EACH WING.
8. HEADWALLS LOCATED AT EDGE OF SHOULDER SHALL BE PARALLEL TO CENTERLINE OF THE ROAD.
9. APRON BETWEEN WINGS SHALL BE SLOPED IN DIRECTION OF FLOW EQUAL TO SLOPE OF PIPE, NOT TO EXCEED 5%.
10. FRONTAL HEADWALL AND ENDS OF WINGS SHALL REMAIN VERTICAL.
11. FENCE AND/OR HANDRAIL IS REQUIRED FOR ALL HEADWALLS, SEE STD. DWG. 30B.
12. ALL EXPOSED EDGES ARE TO HAVE 3/4" CHAMFER.

PIPE CULVERT HEADWALLS 0° SKEW
30"-108" PIPE

LEXINGTON DIVISION OF ENGINEERING

FAYETTE URBAN COUNTY GOVERNMENT
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**CU.YDS. CONC. HEADWALLS**

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**LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT**

**LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT**

**LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT**

**LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT**
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")
  - TO BE FIELD BENT

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

- **BARS**  
  - F
    - 1'-8"(30'-60")
    - BARS
    - 2'-2"(66'-84")
    - 2'-8"(90'-108")

**BARS**

- **P** AND **V**

**LEXINGTON DIVISION OF ENGINEERING**

**BILL OF REINFORCEMENT**

96"–108" DIAMETER CIRCULAR PIPE HEADWALLS

0° SKEW

LEOMONT — FAYETTE URBAN COUNTY GOVERNMENT
## Dimensions and Quantities

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<td>5'-3&quot;</td>
<td>8.83</td>
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</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°.
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 SHOULDER 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>
<th>Triple</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30&quot;</td>
<td>36&quot;</td>
<td>42&quot;</td>
</tr>
<tr>
<td>A</td>
<td>3'–9&quot;</td>
<td>4'–4&quot;</td>
<td>4'–11&quot;</td>
</tr>
<tr>
<td>B</td>
<td>1'–3&quot;</td>
<td>1'–6&quot;</td>
<td>1'–9&quot;</td>
</tr>
<tr>
<td>C</td>
<td>3'–6&quot;</td>
<td>4'–0&quot;</td>
<td>4'–7&quot;</td>
</tr>
<tr>
<td>E</td>
<td>7'–2&quot;</td>
<td>8'–4&quot;</td>
<td>9'–6&quot;</td>
</tr>
<tr>
<td>F</td>
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<td>5'–8&quot;</td>
</tr>
<tr>
<td>H</td>
<td>11'–6&quot;</td>
<td>13'–4&quot;</td>
<td>15'–2&quot;</td>
</tr>
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<td>J</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>M</td>
<td>0’–5”</td>
<td>0’–5”</td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>0’–3.5”</td>
<td>0’–4”</td>
<td>0’–4.5”</td>
</tr>
<tr>
<td>V</td>
<td>0’–8”</td>
<td>0’–8”</td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>0’–8”</td>
<td>0’–8”</td>
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</tr>
<tr>
<td>Y</td>
<td>2’–0”</td>
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**Class “A” Conc. Cu. Yds. 2 Headwalls:**

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<th>Class “A” Conc. Cu. Yds. 2 Headwalls</th>
<th>Lbs. Steel 2 Headwalls</th>
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<tr>
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<tr>
<td>6.22</td>
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<td>7.75</td>
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<td>8.20</td>
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<tr>
<td>10.19</td>
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<tr>
<td>12.30</td>
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**Lbs. Steel 2 Headwalls:**

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<td>660</td>
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<tr>
<td>475</td>
<td></td>
</tr>
<tr>
<td>594</td>
<td></td>
</tr>
<tr>
<td>702</td>
<td></td>
</tr>
<tr>
<td>797</td>
<td></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.

### Bent Bar Shapes

**To be Field Bent**

![Bent Bar Shape Diagram](image)

**Bars**

![Bar Symbol](image)

**Bars**

![Bar Symbol](image)

**Bars**

![Bar Symbol](image)

**BARS**

![Bar Symbol](image)

**BARS**

![Bar Symbol](image)

**BARS**

![Bar Symbol](image)

**Sheet 3 of 3**

**Division of Engineering**

**Bill of Reinforcement**

30"-48" Double & Triple Headwalls—Circular Pipe

0° Skew

---

**LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT**
NOTES:
1. THE MINIMUM REQUIREMENT FOR REINFORCING STEEL SHALL BE GRADE 40. FIELD BENDING WILL BE PERMITTED.
2. ONE ADDITIONAL C BAR WILL BE REQUIRED FOR EACH 15° SKEW.
3. 1 IS CONCRETE PIPE WALL THICKNESS.

PLAN VIEW OF STRUCTURE LOCATIONS

CONDITION NO. 1
6° SKEW

CONDITION NO. 2
1° TO 30° SKEW

CONDITION NO. 3
GREATER THAN 30° SKEW

15° SKEW

30° SKEW

TOE OF SLOPE

EXTEND TOE OF NORMAL SLOPE

WARP SLOPE TO FIT NORMAL SLOPE IN THIS AREA

SECURE GRATES TO STRUCTURE WITH CHAIN SHACKLE, SEE STD. DWG. 128

DETAILED SHOWING LOCATION OF SLOTS FOR GRATES
A,B FOR 2 GRATES
A,B,C FOR 3 GRATES
A,B,C,D FOR 4 GRATES

SEE STD. DWG. 163 FOR GRATE DETAILS.

DIMENSIONS

<table>
<thead>
<tr>
<th>PH</th>
<th>H</th>
<th>L</th>
<th>S</th>
<th>R</th>
<th>V</th>
<th>W</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<td>9&quot;</td>
<td>15&quot;-0&quot;</td>
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<td>12-3&quot;</td>
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NO. 4 REINFORCEMENT BARS

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<tr>
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<th>CLASS 60</th>
<th>CONC.</th>
<th>LBS/10'</th>
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<tr>
<td>14 AT 6&quot;-5&quot;</td>
<td>3 AT 8&quot;-6&quot;</td>
<td>2 AT 2&quot;-8&quot;</td>
<td>81</td>
</tr>
<tr>
<td>16 AT 8-0&quot;</td>
<td>3 AT 10&quot;-6&quot;</td>
<td>2 AT 3-3&quot;</td>
<td>111</td>
</tr>
<tr>
<td>18 AT 9-7&quot;</td>
<td>3 AT 12&quot;-9&quot;</td>
<td>2 AT 3-10&quot;</td>
<td>146</td>
</tr>
<tr>
<td>20 AT 11-4&quot;</td>
<td>3 AT 15&quot;-0&quot;</td>
<td>2 AT 4-5&quot;</td>
<td>187</td>
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LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT
<table>
<thead>
<tr>
<th>BOX INLET-OUTLET SIZE</th>
<th>GRATE NO.</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>
<th>EACH GRADE</th>
<th>TOTAL</th>
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<td>NO. BARS</td>
<td>LENGTH</td>
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<td>1'10 3/4&quot;</td>
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<td>454</td>
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<td>2'10&quot;</td>
<td>2'10 3/8&quot;</td>
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<td>796</td>
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<td>1'10&quot;</td>
<td>1'10 3/4&quot;</td>
<td>347</td>
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</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.**
4. **ALL COMPONENTS ARE 1" X 2" STRUCTURAL STEEL BARS.**
5. **SEE STD. DWG. 162.**
6. **SECURE GRATE TO STRUCTURE WITH CHAIN SHACKLE, SEE STD. DWG. 128.**

---

**LEXINGTON DIVISION OF ENGINEERING**

**GRATES FOR SLOPED AND FLARED BOX INLET-OUTLET**

---

**LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT**
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 3/8" 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 BANDE WHERE HORIZONTAL AND VERTICAL STEEL WILL BE ON 6" CENTERS.
2. HEAT OF WALL SHALL BE DETERMINED BY THE AMOUNT OF FILL BEHIND PIPE.
3. TOP OF END SILL SHALL BE LEVEL WITH CENTERLINE OF PIPE.
4. TOP OF BAFLE 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 LINING SHALL SLOPE SLOPES BEYOND SIDES OF HEADWALL WITH CLASS III CHANNEL LINING.
7. CHANNEL LINING TO EXTEND 4" IN WIDTH ON SLOPES AT WINGWALL AND TO DOWNSWIM END OF CHANNEL.
8. ALL VERTICAL OR SLOPED EXPOSED SURFACES SHALL HAVE A RUBBED FINISH.
9. ALL EXPOSED FLATWORK SHALL HAVE A HAND FLOATED AND BROOKED FINISH.
10. ALL EXPOSED EDGES SHALL HAVE A 3/4" CHAMFER.
11. ALL STEEL SHALL HAVE A 2" MINIMUM CLEARANCE TO THE CONCRETE FACE ON THE BACKFILL SIDE OF THE STRUCTURE.
12. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN THE VERTICAL FACE IS GREATER THAN 30".
13. ANY LARGER PIPES SHALL HAVE A SPECIAL DESIGN STILLING BASIN.
14. ALL LONGITUDINAL REINFORCING BARS IN BAFLE SHALL HAVE SUFFICIENT ANCHORAGE LENGTH IN SIDWALLS.
RETLAIN WALL

### 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 AND 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.

SPECIAL DESIGN 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 2:1 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)
PIPE LAID IN ROCK OR SOIL TRENCH

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

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.
CONCRETE PAVEMENT

12" ROADWAY SURFACE

SAWED JOINTS
NEAT CUT AND SQUARED EDGES WITH TACK COAT
NEW CONCRETE

EXISTING PAVEMENT & SUBBASE, VARYING DEPTH

TACK COAT

MAGNETIC MARKER TAPE
UNDISTURBED EARTH

PIPE BACKFILL DESCRIPTIONS

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<tr>
<th>ZONE</th>
<th>DESCRIPTION</th>
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<tr>
<td>ZONE 1</td>
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<td>ZONE 2</td>
<td>NO. 9 OR NO. 57 STONE</td>
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<td>ZONE 3</td>
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<td>ZONE 4</td>
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</tr>
<tr>
<td>ZONE 5</td>
<td>12&quot; MAX. TOPSOIL, NO ROCK ALLOWED</td>
</tr>
</tbody>
</table>

NOTES:

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

2. SEAL PERIMETER OF CUT PAVEMENT WITH CRACK SEALANT THAT MEETS ASTM D6690, TYPE 2.

3. MAGNETIC MARKER TAPE FOR SANITARY SEWER ONLY.

LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT
CONCRETE PAVEMENT

ROADWAY SURFACE
SAWED JOINTS
NEW CONCRETE

FLOWABLE FILL
VARI
6" MIN.
12" MAX.
UNDISTURBED EARTH

PIPE BACKFILL DESCRIPTIONS

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<th>DESCRIPTION</th>
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<tr>
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<td>2</td>
<td>NO. 9 OR NO. 57 STONE</td>
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<td>4</td>
<td>CONSOLIDATED SOIL, (NO ROCK GREATER THAN 6&quot; DIAMETER), NO. 9, OR NO. 57 STONE</td>
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</table>

BITUMINOUS PAVEMENT

JOINT SEAL, SEE NOTE 3
SAWED JOINTS

EXISTING PAVEMENT & SUBBASE, VARYING DEPTH
TACK COAT

FLOWABLE FILL
VARI
6" MIN.
12" MAX.
UNDISTURBED EARTH

NOTES:

1. FLOWABLE FILL PER KYTC SPECIFICATION 601.03.03 FROM STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION CURRENT EDITION.

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

3. SEAL PERIMETER OF CUT PAVEMENT WITH CRACK SEALANT THAT MEETS ASTM D6690, TYPE 2.
CONCRETE PAVEMENT

EXISTING PAVEMENT SURFACE - PAVEMENT THICKNESS VARIES

ROADWAY SURFACE

SAWED JOINTS

8 INCHES MIN. NEW CONCRETE SEE NOTES 1 & 2

BACKFILL DETERMINED BY "D" = DEPTH

UNDISTURBED EARTH

WHERE D IS LESS THAN 5.0 FEET TOTAL DEPTH OF TRENCH, NO. 9 CRUSHED AGGREGATE SHALL BE USED.

WHERE D IS EQUAL TO OR MORE THAN 5.0 FEET TOTAL DEPTH OF TRENCH, FLOWABLE FILL MATERIAL SHALL BE USED. SEE NOTES 4 & 5.

NOTES:
1. PER KYTC SPECIFICATION 601.03.03 A) CLASS A FROM STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, CURRENT EDITION.
2. REPLACE CONCRETE PAVEMENT WITH NEW CONCRETE PAVEMENT.
3. SEAL PERIMETER OF CUT PAVEMENT WITH CRACK SEALANT THAT MEETS ASTM D6690, TYPE 2.
4. FLOWABLE FILL TO BE PROPORTIONED PER KYTC SPECIFICATION 601.03.03 B) 5) FROM STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, CURRENT EDITION.
5. UTILITY DESIGNERS AND CONTRACTORS SHALL ACCOUNT FOR AND PROVIDE ANY SUITABLE MEANS TO PREVENT PIPE/CONDUIT FLOATATION.

BITUMINOUS PAVEMENT

EXISTING PAVEMENT SURFACE - PAVEMENT THICKNESS VARIES

JOINT SEAL, SEE NOTE 3

KYTC 2" BITUMINOUS SURFACE MIX

SAWED JOINTS

6 INCHES MIN. NEW CONCRETE THICKNESS

BACKFILL DETERMINED BY "D" = DEPTH

UNDISTURBED EARTH

TO BE USED WITH STANDARD DRAWING 201-4
NOTES:
1. WHEN LESS THAN 3", THEN THE PAVEMENT SHALL BE REMOVED TO THE EDGE OF PAVEMENT AND REPLACED PER STANDARD DRAWING 201-3.
2. STREET CUT SHALL BE ORIENTED EITHER PARALLEL OR PERPENDICULAR TO CURB OR GUTTER.
3. ALL SAWED JOINTS SHALL PRODUCE NEAT CUTS WITH SQUARED EDGES.

AREA SHALL BE EXCAVATED TO 8" BELOW ROADWAY SURFACE, THEN REPLACED PER STANDARD DRAWING 201-3.

AREA SHALL BE MILLING 2" AND REPLACED WITH 2" BITUMINOUS SURFACE MIX.
## 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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<td>MAXIMUM DEPTH OF COVER (FEET)</td>
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* 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 20', MUST BE APPROVED BY THE ENGINEER.
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.

SECTION A–A

(PIPE WITH TOP HALF REMOVED OR PAVED INVERT)
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-FIBRATED ASPHALT DOWPROOFING 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. 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. 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.
SECTION A-A

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 APPLICABLE FOR WATER STOPS 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 OUTLET PIPE.
9. DO NOT USE IN CASES WHERE THE DROP IS 2'-0" OR LESS.
SECTION PLAN

PLUGGED STUB FOR FUTURE SEWER, 12" MIN. - 6" MAX.

SLOPE MAX.

SMOOTH FINISHED CONCRETE FORMED CHANNEL

BRUSH FINISHED CONCRETE FORMED SECTION

SECTION A-A

MANHOLE WALL

FLEXIBLE ACID RESISTANT NEOPRENE GASKET WATERSTOP

NON-SHRINK GROUT COMPATIBLE WITH WATERSTOP PIPE MATERIAL

SEWER PIPE

FLEXIBLE ACID RESISTANT NEOPRENE GASKET WATERSTOP

MANHOLE BASE

WATER STOP DETAIL

NOTE:
MANHOLES SHALL PASS VACUUM TEST PER ASTM C-1244 PRIOR TO ACCEPTANCE.
NOTES:
1. LIFT RINGS TO BE CUT BEFORE ADDING THE NEXT RING OR TOP.
2. COAT OUTSIDE AND IN BETWEEN ADJUSTING RINGS WITH SEMI-PURIFIED ASPHALT DAMPROOFING 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 APPROVED EQUAL.
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.

GRADE RING WIDTH CHART

<table>
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<th>X</th>
<th>WEIGHT LBS.</th>
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<td>12&quot;</td>
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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 INFUENT PIPES WILL BE AT AN ELEVATION 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 LFUCC.
16. FIELD Poured BASES (DOUGHHOUSE MANHOLES) SHALL ONLY BE ALLOWED WITH PRIOR APPROVAL OF THE LFUCC.

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 5"-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 5"-0" manhole diameter is acceptable.
**FRAME DETAIL**

SET FRAME CASTING IN FULL MORTAR BED, FOR WATERTIGHT MANHOLE FRAME AND LID – SEE APPLICABLE STANDARD DRAWING

**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.
NOTE:

MANHOLE FRAME & LID ASSEMBLY SHALL BE NEENAH #R-1916-D OR APPROVED EQUAL, HAVE A MINIMUM LID WEIGHT OF 150 LBS. AND A TOTAL MINIMUM FRAME & LID WEIGHT OF 335 LBS. WITH ALL STEEL IN ACCORDANCE WITH ASTM A-48 CLASS 35 SPEC. OR HIGHER.

LEXINGTON ─ FAYETTE URBAN COUNTY GOVERNMENT
IN GENERAL ALL LATERALS SHALL BE INSTALLED TO WITHIN 6' OF THE FINISH SURFACE OR GRADE

6" TO 12" 45° ANGLE

PER LFUCG DOE/DWQ. MANUAL, INSERT EASILY REMOVABLE WATERTIGHT PLUG AT END.

PROVIDE NO. 5 BAR 6' LONG TO PROTECT END OF PIPE FROM TRENCHING EQUIPMENT

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

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

LATERAL MATERIAL & INSTALLATION SHALL COMPLY WITH SANITARY SEWER AND PUMP STATION MANUAL, LFUCG, LATEST EDITION.

SECTION B-B

LEXINGTON DIVISION OF ENGINEERING

HOUSE LATERAL FOR GREATER THAN 6' DEEP SEWER IN SOIL & ROCK EXCAVATION

LEOMINGTON — FAYETTE URBAN COUNTY GOVERNMENT
SEE STD. DWG. 200 FOR BEDDING, TRENCHING, LAYING, AND BACKFILLING

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

45° BEND

MIN. SLOPE 1/8" PER FT.

EASEMENT/PROPERTY LINE

PER LFUCG DCE/DWG MANUAL, INSERT EASILY REMOVABLE WATERTIGHT PLUG AT END.

PROVIDE NO. 5 BAR 6' LONG TO PROTECT END OF PIPE FROM TRENCHING EQUIPMENT

6" MIN.

"T" BRANCH

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

SANITARY SEWER LINE

CRUSHED STONE NO. 9, SEE APPLICABLE STANDARD DRAWING

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

LATERAL MATERIAL & INSTALLATION SHALL COMPLY WITH SANITARY SEWER AND PUMP STATION MANUAL, LFUCG, LATEST EDITION.

SECTION A-A
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

LATERAL MATERIAL & INSTALLATION SHALL COMPLY WITH SANITARY SEWER AND PUMP STATION MANUAL LFUCG, LATEST EDITION.
CLEAN OUT

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NOTES:

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

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 DEEPER 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".

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

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

2" X 3" LETTERS

1" LETTERS

LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT

DIVISION OF ENGINEERING
RIGHT OF WAY OR EASEMENT LATERAL CLEANOUT IN NON-PAVED AREAS AND YARDS

STANDARD DRAWING NO. 234
APPROVED
DATE: 4/26/17
CONTRACTOR: 9/26/17

LEXINGTON - FAYETTE URBAN COUNTY GOVERNMENT
CREEK CROSSING DETAIL FOR SOIL CREEKBED

CREEK CROSSING DETAIL FOR ROCK CREEKBED

NOTES:

1. A WATERSTOP SHALL BE PROVIDED ON THE UPSTREAM SIDE OF THE DOWNSTREAM MANHOLE.
2. PIPE TO BE DUCTILE IRON WHEN DEPTH OF COVER IS LESS THAN 4'.
3. SPECIAL DESIGN REQUIRED WHEN COVER IS 30' OR LESS.
4. CONTRACTOR SHALL USE THE CREEK CROSSING DETAIL THAT CORRESPONDS TO THE CHANNEL BED ENCOUNTERED.

CONCRETE CAP SHALL BE PLACED ACROSS CHANNEL BED AND EXTEND 15 FT. INTO EACH CHANNEL BANK, MEASURED FROM BOTTOM OF BANK.
SAVING EDGE OF TRENCH 14" MIN. DEPTH TO PREVENT FRACTURING OF SURFACE BEDROCK BEYOND TRENCH EXCAVATION (TYP. EACH SIDE).
WHILE CROSSING THE CREEK WITH EQUIPMENT, PROVIDE NECESSARY MEANS TO PREVENT FRACTURING OF BEDROCK OUTSIDE THE TRENCH. BY USING GRAVEL SWAMP MATS, OR OTHER APPROVED METHOD.
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 H5=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 WATER QUALITY PRIOR TO CONSTRUCTION.

5. MULTIPLE COMPARTMENT INTERCEPTORS ARE ACCEPTABLE.

6. MINIMUM CAPACITY OF INTERCEPTORS IS 1000 GALLONS.

7. PIPE CLEANOUT TEE SHALL BE THE SAME SIZE AS THE PIPE AND BE WITHIN 6" OF THE GREASE INTERCEPTOR ON THE OUTLET LINE. THE INLET LINE CLEANOUT IS OPTIONAL.

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

9. DIAMETER OF PIPE IN GREASE INTERCEPTOR SHALL BE THE SAME DIAMETER AS THE INLET LATERAL PIPE.
REMOVE PORTION OF EXISTING MANHOLE & REPLACE WITH WATERPROOF 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

NEW SEWER PIPE 1" MIN (TYP)

FLEXIBLE ACID RESISTANT NEOPRENE GASKET WATERSTOP

REMOVE PORTION OF EXISTING MANHOLE & REPLACE WITH WATERPROOF 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
NON-RESIDENTIAL COLLECTOR

NON-RESIDENTIAL OR INDUSTRIAL COLLECTOR

RESIDENTIAL COLLECTOR AND INDUSTRIAL LOCAL

RESIDENTIAL COLLECTOR (OBSOLETE) - USED TO COMPLETE EXISTING STREETS

RESIDENTIAL CONTINUING LOCAL OR COMMERCIAL SERVICE

RESIDENTIAL CUL-DE-SAC AND CONTINUING LOCAL (SEE NOTE 3)

RURAL LOCAL

NOTES:
1. SLOPES AND DRAINAGE DITCHES OUTSIDE THE R.O.W. SHALL BE APPROVED BY THE ENGINEER.
3. PARKING RESTRICTED TO ONE SIDE OF ROADWAY.

***PENDING LAND SUBDIVISION REGULATIONS UPDATE***
TYPE 1

TYPE 2

TYPE 3

TYPE 4

(RESIDENTIAL LOCAL STREETS ONLY)

NOTES:

1. CONCRETE SHALL BE KDOT CLASS "A".

2. SAWED CONTRACTION JOINTS SHALL BE CONSTRUCTED EVERY 20 FEET, WITH A MIN. DEPTH OF 3", IN ACCORDANCE WITH KDOT STANDARD SPECIFICATION.

3. FULL DEPTH 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).
INTEGRAL CURB, TYPE 1

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. FULL DEPTH 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 CURLED WITH WHITE PIGMENTED MEMBRANE FORMING COMPOUND (AASHTO M 148, TYPE 2).

NOTE:

- FINISH GRADE
- UTILITY STRIP OR SIDEWALK
- PAVEMENT SLOPE
- COMPACTED DGA
- VARYING (4' TYP.)
- 1/4' FT. SLOPE
- 3/8' TOOLLED GROOVE
- PAVEMENT SLOPE
- 1/2' R

LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT

DIVISION OF ENGINEERING
INTEGRAL CURB,
HEADER CURB,
MONOLITHIC CURB & SIDEWALK

STANDARD DRAWING NO. 302
APPROVED 4/14/17
CHECKED 9/28/17
SIDEWALK/CURB AND GUTTER

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 MEET THE REQUIREMENTS FOR CLASS "A" AND SHALL BE COATED WITH WHITE PIGMENTED CURING COMPOUND TYPE 2, ALL AS SPECIFIED IN KYTC SPECIFICATION, SECTION 823.02.

2. FULL DEPTH EXPANSION JOINTS SHALL BE PLACED AT CONTACT WITH NEW OR EXISTING CONCRETE, AT ABUTTING RIGID STRUCTURES OR FEATURES SUCH AS BUILDINGS, DRIVEWAYS, UTILITY POLES, FIRE HYDRANTS, ETC. AND NOT TO EXCEED 200' MAXIMUM SPACING FOR SLIP FORM APPLICATION AND 32' FOR HAND PLACED. EXPANSION MATERIAL SHALL BE 1/2" ASPHALTIC MATERIAL OR APPROVED EQUAL MEETING KYTC 807.04.03.

3. CONTROL JOINTS SHALL BE PLACED AT INTERVALS EQUIVALENT TO THE SIDEWALK WIDTH, WITH A DEPTH OF 1/4 THE SIDEWALK THICKNESS.

4. 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.

5. SIDEWALK REPAIR FOR ANY CUTS MADE FOR UTILITY WORK REPLACEMENT SHALL BE FULL PANEL MATCHING THE ORIGINAL DIMENSIONS.

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.
NOTES:
1. INLET LOCATIONS WILL VARY, DEPENDENT ON CROSSWALK AND RAMP LOCATION.
2. THE RAMP SHALL BE CONSTRUCTED OF CLASS A CONCRETE AND SHALL UTILIZE CAST IN PLACE REPLACEABLE TACTILE WARNING TILE SUCH AS ADA SOLUTIONS, INC., ACCESS TILE TACTILE SYSTEMS, ARMOR-TILE HERCULET OR APPROVED EQUAL. TILE COLOR SHALL BE FEDERAL YELLOW.
3. THE NORMAL GUTTER LINE SHOULD BE MAINTAINED THROUGH THE RAMP.
4. RAMPS SHOULD BE LOCATED WITHIN MARKED LIMITS OF CROSSWALKS.
5. WHERE NO CURB EXISTS, STREET EDGE SHALL BE SAW CUT, OR AS DIRECTED BY L.F.U.C.G. ENGINEER.
6. MAXIMUM CROSS SLOPE OF SIDEWALK 1/4": 1'.
7. SIDEWALK REPAIR FOR ANY CUTS MADE FOR UTILITY WORK REPLACEMENT SHALL BE FULL PANEL MATCHING THE ORIGINAL DIMENSIONS.

SHEET NOTES:
1. MAXIMUM RAMP SLOPE 1": 1'.
2. 1/2" EXPANSION JOINT AT BACK OF CURBLINE AND SIDEWALK LINE, FULL DEPTH.
3. NO BUMP PERMITTED.
4. SLOPE VARIES UNIFORMLY TO A MAXIMUM OF 1": 1' AT GUTTER LINE.
5. MAXIMUM CROSS SLOPE OF LANDING 1/4": 1' IN ALL DIRECTIONS.
6. MAXIMUM LONGITUDINAL SLOPE 1/2": 1', OR ALONG THE CENTERLINE GRADE OF THE ADJACENT ROADWAY.

PLAN VIEW
NORMAL TREATMENT FOR ARTERIALS AND SIGNALIZED INTERSECTIONS

CROSS SECTION

PROFILE

SIDEWALK RAMP

LEXINGTON - FAYETTE URBAN COUNTY GOVERNMENT
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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SECTION A–A
CURB DEPRESSED, FULL WIDTH OF FLARES.
TOPOF CURB 2" TOP OF CURB 2" +R 1/2"
GUTTER LINE

SECTION B–B

SECTION C–C
FRONT OF SIDEWALK ELEVATION DETERMINED BY ADDING 1/6" TO 1" ACROSS UTILITY STRIP FROM TOP OF CURB. IF COMING OFF 1 1/2" LIP ADD ANOTHER 4 1/2" TO DETERMINE ELEVATION AT FRONT OF SIDEWALK.

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 1/16".
3. MAXIMUM SLOPE ON APRON SHALL NOT EXCEED 11/16".
4. NO CATCH BASINS WILL BE PUT IN APRONS.
5. ALL EXPANSION JOINTS SHALL BE FULL DEPTH.

LEXINGTON - FAYETTE URBAN COUNTY GOVERNMENT

DIVISION OF ENGINEERING
COMMERCIAL ENTRANCE DETAILS

LEXINGTON

STANDARD DRAWING NO: 307-2
APPROVAL: 4/14/17
COMPLETED: 9/22/17
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"x1/16" GALVANIZED STEEL 5/16"x1 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.

LEGEND—ALTERNATES

<table>
<thead>
<tr>
<th>TUBULAR</th>
<th>ROLL FORMED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 1/2&quot; O.D. @ 3.65#/L.F.</td>
<td>3.5&quot;x3.5&quot; @ 5.14#/L.F.</td>
</tr>
<tr>
<td>2&quot; O.D. @ 2.72#/L.F.</td>
<td>2.250&quot; H-COL@ 3.26#/L.F. OR 2.250&quot; C-COL@ 2.64#/L.F.</td>
</tr>
<tr>
<td>3 3/4&quot; TRUSS ROD &amp; TIGHTENER</td>
<td>0.375&quot; Ø TRUSS ROD &amp; TIGHTENER</td>
</tr>
<tr>
<td>APPROVED CAPS</td>
<td>NOT REQUIRED</td>
</tr>
<tr>
<td>5 1 5/8&quot; BRACE @ 2.27#/L.F.</td>
<td>1.250&quot;x1.625&quot; @ 1.35#/L.F.</td>
</tr>
<tr>
<td>1 1/8&quot; O.D. @ 2.27#/L.F.</td>
<td>1.250&quot;x1.625&quot; @ 1.35#/L.F.</td>
</tr>
<tr>
<td>3/8&quot;x3/4&quot; FLAT STRETCHER BAR</td>
<td>NOT REQUIRED</td>
</tr>
<tr>
<td>BRACE BAND &amp; TENSION BAND</td>
<td>NOT REQUIRED</td>
</tr>
</tbody>
</table>

LEXINGTON – FAYETTE URBAN COUNTY GOVERNMENT
NOTES:
1. ALL POSTS SHALL BE SET IN CONCRETE TO THE DIMENSIONS AS INDICATED ON THIS DRAWING.

2. A 1 5/8" O.D. AT 2.27 LB. PER L.F. OR 1 1/4"x1 5/8" ROLL FORMED SECTION AT 1.35 LB. PER L.F. BOTTOM RAIL SHALL BE REQUIRED AROUND ALL UTILITY INSTALLATIONS AND AT OTHER LOCATIONS DESIGNATED BY THE ENGINEER.

3. 8' HIGH FENCE SHALL HAVE 3' FABRIC HEIGHT. 9' HIGH FENCE SHALL HAVE 8' FABRIC HEIGHT. 10' HIGH FENCE SHALL HAVE 9' FABRIC HEIGHT. 11' HIGH FENCE SHALL HAVE 10' FABRIC HEIGHT. 12' HIGH FENCE SHALL HAVE 11' FABRIC HEIGHT.

4. BRACE BAND SHALL BE 3/8"x1 1/2" GALVANIZED STEEL WITH 3/8"x1 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. 0.03 FADED FOR TUBULAR POSTS IS NOMINAL – ASTM A-120 SHALL GOVERN.

6. CHAIN LINK FENCE FABRIC SHALL BE 0.148 INCH NOMINAL DIAMETER (NO. 9 GAGE) WIRE WOVEN IN 2 INCH MESH.

LEGEND—(ALTERNATES)

<table>
<thead>
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<tr>
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<td>3.5&quot;x3.5&quot; @ 5.14#/L.F.</td>
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</tr>
<tr>
<td>1 1/2&quot; BRACE</td>
<td>1.250&quot;x1.625&quot; @ 1.35#/L.F.</td>
</tr>
<tr>
<td>1 1/4&quot; O.D.</td>
<td>1.250&quot;x1.625&quot; @ 1.35#/L.F.</td>
</tr>
<tr>
<td>3/4&quot;x3/4&quot; 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>
<tr>
<td>CHAIN LINK FENCE</td>
<td></td>
</tr>
<tr>
<td>REMOVE FOR HEADWALL</td>
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<td>CAP OR FITTED OVER CLAMP</td>
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<td>BRACE &amp; TRUSS CONNECTION</td>
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<td>CONCRETE HEADWALL OR RETAINING WALL</td>
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<tr>
<td>SEAL WITH SILICONE GROUT</td>
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<tr>
<td>CORE DRILLED OR PRESET SLEEVE</td>
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<tr>
<td>DETAIL &quot;B&quot;</td>
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LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT
**LEGEND - (ALTERNATES)**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>END POST 2 1/2&quot; O.D. @ 3.65#/L.F.</td>
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<tr>
<td>END POST 3&quot; O.D. @ 3.65#/L.F.</td>
<td>3 1/2&quot;X3 1/2&quot; @ 5.14#/L.F.</td>
</tr>
<tr>
<td>4&quot; O.D. @ 9.1#/L.F. GATE POST</td>
<td>NO ALTERNATE</td>
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<tr>
<td>2&quot; O.D. @ 2.72#/L.F. GATE FRAME</td>
<td>NO ALTERNATE</td>
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<tr>
<td>1 1/4&quot; O.D. @ 2.27#/L.F.</td>
<td>NO ALTERNATE</td>
</tr>
<tr>
<td>APPROVED CAPS</td>
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<tr>
<td>FLAT STRETCHER BAR</td>
<td>NOT REQUIRED</td>
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<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 7' FABRIC HEIGHT. 9' HIGH GATES SHALL HAVE 8' FABRIC HEIGHT. 10' HIGH GATES SHALL HAVE 9' FABRIC HEIGHT. 11' HIGH GATES SHALL HAVE 10' FABRIC HEIGHT. 12' HIGH GATES SHALL HAVE 11' 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 NECESSITY 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 FABRIC SHALL BE 0.148 INCH NOMINAL DIAMETER (NO.9 GAGE) WIRE WOVEN 2 INCH MESH.

- 6' TO 13' WIDTH FOR SINGLE GATE OR 12' TO 26' WIDTH FOR DOUBLE GATE.
- 4' TO 6' WIDTH
PLANK FENCE

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 POPLAR.
RIGHT-OF-WAY FENCE

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.
   - OR -
   ROLL FORM POST AT 1.35 LBS. PER FOOT. (SEE DETAIL)
4. STUDED "T" POST AT 1.33 LBS. PER FOOT.
5. NOT REQUIRED FOR ROLL FORM POST.

ALTERNATE METHODS OF SECURING VERTICAL STAY WIRE TO THE 
HORIZONTAL WIRE OF THE FABRIC.

DETAIL "A"

LEXINGTON
DIVISION OF ENGINEERING

WOVEN WIRE 
RIGHT-OF-WAY FENCE 
TYPE 1

LEXINGTON – FAYETTE URBAN COUNTY GOVERNMENT
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.
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

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
**SECTION A-A 2:1 SLOPE**

**STEP CROSS SECTION**

**STEP DETAIL FOR 1 1/2:1 SLOPE**

1. **MAT REINFORCEMENT**
   - 2. No. 4 REINFORCEMENT BARS, LONG. BARS 6"O.C. AND TRANSV. BARS 12"O.C., MIN. GRADE 40, OR WELDED WIRE FABRIC - 6X6 - W4XW4, 58 LBS./100 SQ. FT.
2. **MAT REINFORCEMENT**
   - No. 4 REINFORCEMENT BARS ADDITIONALLY AS SHOWN.
3. **MAT REINFORCEMENT**
   - ROUND ALL EXPOSED EDGES AND Corners 1/4" R.
4. **MAT REINFORCEMENT**
   - IN BOTTOM OF THE STEPS SHALL BE WIRE FABRIC OR BAR MAT No. 4.
5. **MAT REINFORCEMENT**
   - HANDRAIL SHALL BE REQUIRED WITH THREE OR MORE STEPS.

**TABLE OF QUANTITIES**

<table>
<thead>
<tr>
<th>SLOPE</th>
<th>LOCATION</th>
<th>ADDITIONAL NO. 4 BAR REINF. (LBS)</th>
<th>MAT REINFORCEMENT</th>
<th>ADDITIONAL NO. 4 BAR REINF. (LBS)</th>
<th>WIRE FABRIC (SQ.FT.)</th>
<th>BAR MAT (LBS)</th>
<th>Cu. Yds., Class “A” Concrete</th>
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<tbody>
<tr>
<td>2:1</td>
<td>BOTTOM LANDING</td>
<td>23.547</td>
<td>3.340</td>
<td>11.76</td>
<td>2.375</td>
<td>27.388</td>
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<td>INTERMEDIATE STEP</td>
<td>8.015</td>
<td>1.336</td>
<td>5.991</td>
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<td>12.191</td>
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<td>22.483</td>
<td>3.340</td>
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<td>23.603</td>
<td>3.340</td>
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<td>INTERMEDIATE STEP</td>
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<td>3.340</td>
<td>9.710</td>
<td>1.958</td>
<td>21.014</td>
<td>3.952 0.281 0.054</td>
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</tbody>
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① APPROXIMATE QUANTITY TO ADD FOR EACH ADDITIONAL FOOT OF WIDTH OVER 4'-0".

**LEXINGTON**

**DIVISION OF ENGINEERING**

**CONCRETE STEPS**

LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT
TOP RAIL FOR RETAINING WALLS

SLEEVE CONNECTIONS
3" X 2" X 1" CAP
WELDED ON END OF
TOP RAIL AND
BOTTOM RAIL

60" MAX C-C

2 1/2" X 1 1/2" TOP RAIL

3" SQ PICKETS

2" X 2" X 4" POST

1 1/2" X 1 1/2" BOTTOM RAIL

1/2" DIA. HOLE

CONCRETE LINE

FOOT TRAFFIC

FOOT TRAFFIC

LINE TRAFFIC

LINE TRAFFIC

38" - BIKE TRAFFIC

44" - BIKE TRAFFIC

CONCRETE LINE

SECTION

NOTES:
1. HANDRAILS SHALL BE DN 40 SCHEDULE 40 ALUMINUM PIPE IN ACCORDANCE WITH ASTM-B221 OR B210 ALLOY 6061-T6.
2. SQUARE BARS SHALL BE DN 40 SCHEDULE ALUMINUM IN ACCORDANCE WITH ASTM-B221 OR B210 ALLOY 6061-T6.
3. ALL METAL TO BE POWDER COATED BLACK IN ACCORDANCE WITH AAMA 2605.
4. GROUT POSTS TO CONCRETE - SEE POST SETTINGS DETAIL THIS SHEET.
5. ANCHOR POSTS IN CORED OR FORMED HOLES.
6. ALUMINUM SURFACES, SUCH AS EXPOSED ENDS, IN CONTACT WITH CONCRETE, GROUT, OR DISSIMILAR METALS SHALL BE PROTECTED WITH A COAT OF BITUMINOUS PAINT.

LEXINGTON
DIVISION OF ENGINEERING

TOP RAIL FOR RETAINING WALLS HANDRAIL FOR STEPS

LEXINGTON — FAYETTE URBAN COUNTY GOVERNMENT
DETAIL "A"

4" PAVED SHOULDER
1:1 1/2 SLOPE

DETAIL "B"

6" DENSE GRADED AGGREGATE
1:1 1/2 SLOPE

DETAIL "C"

COMPACTED SOIL
18" MINIMUM EXCAVATED
AND COMPACTED SOIL

PAVED SHOULDER

GRADE
1/4 1/1 SLOPE
1 1/2 VARIOUS
SEE DETAIL "A"

ROCK SHOULDER

GRADE
1/4 1/1 SLOPE
1 1/2 VARIOUS
SEE DETAIL "B"

SOIL SHOULDER

GRADE
1/4 1/1 SLOPE
2 1/2 VARIOUS
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 KEY SHALL NOT BE REQUIRED IF BOTH EXISTING AND NEW PAVEMENT ARE TO RECEIVE AN OVERLAY AS PART OF THIS CONTRACT.
4. SEAL PERIMETER OF CUT PAVEMENT WITH CRACK SEALANT THAT MEETS ASTM D6690, TYPE 2.

SECTION A-A
LONGITUDINAL EDGE KEY

SECTION B-B
TRANSVERSE EDGE KEY
### TYPICAL SECTION

**CASE 1**

- **FILTER FABRIC**
- **BITUMINOUS SURFACE**
- **BITUMINOUS BASE**
- **DGA**
- **FILL MATERIAL**
- **6" PERFORATED PIPE**
- **FILTER FABRIC**

**CASE 2**

- **TOP OF CURB**
- **ROADWAY SURFACE**
- **PERFORATED PIPE**

### TYPICAL SUBGRADE DRAINAGE LOCATIONS

- **SAG VERTICAL CURVE**
  - \( l_1 = 100 \text{ ft. or the length required to reach the 1x slope point, whichever is larger.} \)

- **HILLSIDE**
  - \( l_2 = 100 \text{ ft. or the length to the crest of the hill, whichever is larger.} \)

- **CUT TO FILL**
  - \( l_3 = 100 \text{ ft. or the length required to reach the crest of the hill, whichever is larger.} \)

### 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. 78, 8, 9M COARSE AGGREGATE OR NATURAL SAND. THE FILL MATERIAL SHALL BE THOROUGHLY COMPACTED IN LAYERS NOT EXCEEDING 6 INCHES THICK 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 CURBS AND GUTTERS.**
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.
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 LFUCG engineer.
3. The end 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 100' of perforated pipe is required uphill from basins on grade and 100' of perforated pipe is required each way from sag basins.

SUBGRADE ELEVATION

CUT TO FILL

TYPICAL SUBGRADE DRAINAGE LOCATIONS
**DETAIL FOR TRANVERSE UNDERDRAIN**

**CUT TO FILL CONDITION**

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. BENCHEING 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.

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**SECTION A-A**

OUTLET UNDERDRAINS SHALL BE LOCATED AT APPROXIMATELY 300' INTERVALS OR AS DIRECTED BY THE ENGINEER. UNDERDRAINS MAY BE CONNECTED TO CROSS DRAINS.

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**DETIAL 2**

**DETAIL FOR LONGITUDINAL UNDERDRAINS**

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**NOTE:**
1. ALL PERFORATED AND NON-PERFORATED PIPE SHALL COMPLY WITH ASTM & KDOT SPECIFICATIONS.

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**SHEET NOTES:**
1. LIMITS OF FIRST BENCH.
2. BACKFILL MATERIAL
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.
10. NOT TO BE USED ON FEDERAL AID TRANSPORTATION PROJECTS.