GENERAL NOTES
1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE, CAPACITY AND BACKFILL DETAILS, TO BE PROVIDED BY MANUFACTURER.
3. ALL ELEVATIONS, DIMENSIONS AND LOCATIONS OF RISERS AND INLETS SHALL BE VERIFIED BY THE INCORPORATOR OF RECORD.
5. THE CISTERN IS MANUFACTURED FROM STEEL REINFORCED POLYETHYLENE PLASTIC.
6. SYSTEM TO MEET ASHTO HS20 LOAD ARCHING, PER ASHTO LRFD SECTION 12.
7. ACCESS COVERS TO MEET ASHTO MSE MEMORIAL RATING.
8. MINIMUM COVER IS EQUAL TO PIPE DIAMETERS AND NO LESS THAN 12 INCHES FROM TOP OF PIPE TO BOTTOM OF PAVEMENT. 24" AND 30" PIPE MINIMUM COVER IS 36 INCHES.

INSTALLATION NOTES
A. INSTALLATION GUIDE TO BE REVIEWED BY CONTRACTOR PRIOR TO INSTALLATION.
B. CONTRACTOR TO PROVIDE, INSTALL AND GROUT ALL INLET AND OUTLET PIPES.
C. CONTRACTOR TO PROVIDE AND INSTALL ALL BEDDING AND BACKFILL MATERIAL.
D. PRIOR TO PLACING BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSATISFACTORY FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, A SECONDARY SHALE SHALL BE UTILIZED OR UNSATISFACTORY MATERIALS SHALL BE REMOVED AND BROUGHT BACK TO GRADE WITH FILL MATERIAL AS APPROVED BY THE ENGINEER OF RECORD. ONCE THE FOUNDATION PREPARATION IS COMPLETE, THE BEDDING MATERIAL CAN BE PLACED.
E. STONE EMERGENT MATERIAL SHALL BE INSTALLED TO 95% STANDARD PROCTOR DENSITY AND PLACED IN 6 INCH TO 8 INCH LIFTS SUCH THAT THERE IS NO MORE THAN A TWO LIFT DIFFERENTIAL BETWEEN ANY OF THE BARRELS AT ANY TIME. GRANULAR BACKFILL MATERIAL SHALL BE COMPACTED TO 95% SP. BACKFILLING SHALL BE ADVANCED ALONG THE LENGTH OF THE BARRELS AT THE SAME RATIO TO AVOID DIFFERENTIAL LOADING AND DISPLACEMENT OF THE BARRELS. THE MINIMUM PIPE SPACING MUST BE MAINTAINED.
F. REFER TO INSTALLATION GUIDE FOR TEMPORARY CONSTRUCTION LOADING GUIDELINES.
G. IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.
H. GENERAL INSTALLATION METHODS AND MATERIALS TO BE IN ACCORDANCE WITH ASTM D3231.

OPERATION NOTES
1. PROPERTY OWNER MUST INSPECT AND EXERCISE ANNUALLY.
2. THE STORAGE MUST DEWATER IN 72 HOURS OR 12 HOURS BEFORE STORM EVENT.
3. CISTERN MUST BE PROTECTED FROM FREEZING EFFECTS.
NOTES:

1. ALL HOODS SHALL BE CONSTRUCTED OF A FIBERGLASS REINFORCED RESIN COMPOSITE WITH ISO GEL COAT EXTERIOR FINISH WITH A MINIMUM 0.125" LAMINATE THICKNESS.
2. ALL HOODS SHALL BE EQUIPPED WITH A WATERTIGHT ACCESS PORT, A MOUNTING FLANGE, AND AN ANTI-SIPHON VENT PIPE AND ELBOW AS DRAWN. (SEE CONFIGURATION DETAIL).
3. THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY OUTLET PIPE SIZE AS PER MANUFACTURER'S RECOMMENDATION (SNOUT SIZE ALWAYS LARGER THAN PIPE SIZE).
4. THE BOTTOM OF THE HOOD SHALL EXTEND DOWNWARD A MINIMUM DISTANCE EQUAL TO ½ THE OUTLET PIPE DIAMETER WITH A MINIMUM DISTANCE OF 6" FOR PIPES < 12" ID.
5. THE ANTI-SIPHON VENT SHALL EXTEND ABOVE HOOD BY MINIMUM OF 3" AND A MAXIMUM OF 12" ACCORDING TO STRUCTURE CONFIGURATION.
6. THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED SMOOTH AND FREE OF LOOSE MATERIAL AND PIPE SHALL BE FINISHED FLUSH TO WALL.
7. THE REMOVABLE HOOD SHALL BE ATTACHED TO THE STRUCTURE WITH THE SLOTTED TABS MOUNTED OVER 3½ STAINLESS STEEL BOLTS AND OIL-RESISTANT GASKETS.
8. POSITION HOOD SUCH THAT BOTTOM FLANGE IS AT A DISTANCE OF ½ OUTLET PIPE DIAMETER (MIN.) BELOW THE PIPE INVERT. MINIMUM DISTANCE FOR PIPES <12" ID. IS 6".
9. RESTRICTOR AND SNOUT WHERE PAIRED SHOULD BE INSTALLED IN SUCH A WAY THAT RESTRICTOR AND SNOUT REMAIN INSPECTABLE.
10. RESTRICTOR AND SNOUT HOOD SHALL BE CURVED TO INSIDE RADIUS OF STRUCTURE AND WATERTIGHT.
NOTES:
1) RIPRAP APRON DIMENSIONS AND GRADATIONS SHALL BE DETERMINED ACCORDING TO IUM PRACTICE STANDARD 910, TABLES 1 AND 2.
2) WOVEN GEOTEXTILE FABRIC SHALL MEET OR EXCEED REQUIREMENTS IN ILLINOIS URBAN MANUAL MATERIAL SPECIFICATION 592, TABLE 1, CLASS I, II, OR III.
3) SEDIMENT FOREBAY/PRETREATMENT BASIN VOLUME SHALL BE A MINIMUM OF 10% OF THE STORMWATER DETENTION/VOLUME CONTROL STORAGE.
4) ROCK CHECK DAM DESIGNED IN ACCORDANCE WITH IUM PRACTICE STANDARD FOR ROCK CHECK DAM (905).
5) CONCRETE OVERFLOW SPILLWAY OR GABION BASKETS MAY BE USED IN PLACE OF ROCK CHECK DAM.
6) DEPTH IN SEDIMENT FOREBAY/PRETREATMENT BASIN SHALL BE A MINIMUM OF 2 FEET AND A MAXIMUM OF 6 FEET.
7) SIDE SLOPES OF OF FACILITY SHALL NOT EXCEED 3:1.

TECHNICAL GUIDANCE MANUAL

SEDIMENT FOREBAY/ PRETREATMENT BASIN TYPICAL DETAIL
PERMEABLE PAVEMENT AREA

ENVIRONMENTALLY FRIENDLY PARKING LOT

BENEFITS OF THIS TECHNOLOGY INCLUDE:

- REDUCES STORMWATER RUNOFF
- IMPROVES WATER QUALITY
- CLEANS AND FILTERS STORMWATER

MAINTAIN WITH CARE:

NO STORAGE OR DISPERSING OF GRANULAR MATERIALS
DO NOT SEAL COAT

NOTES:
1. ONE SIGN SHALL BE POSTED PER 40 PARKING SPACES.
SECTION A - A

NOTES:
1) BOTTOM OF VOLUME CONTROL FACILITY SHALL BE AS FLAT AS POSSIBLE. BOTTOM SLOPES SHALL NOT EXCEED 20:1.
2) DEPTH BELOW OUTLET SHALL NOT EXCEED 12 INCHES.
3) DETENTION BASIN SIDE SLOPES SHALL BE 3:1 MINIMUM.
4) FOLLOW THE REQUIRED PRETREATMENT MEASURES LISTED ON THE VOLUME CONTROL PRETREATMENT MEASURES DETAIL (PAGE 17).

TECHNICAL GUIDANCE MANUAL
TYPICAL VOLUME CONTROL STORAGE BELOW DETENTION BASIN OUTLET
NOTES:
1. MULCH LAYER SHALL BE HARDWOOD MULCH OR OTHER NON-FLOATING GROUND COVER.
2. AVOID INSTALLATION ON SLOPES GREATER THAN 15 TO 1 AND ABOVE COMPACTED FILL.
3. LONGEST FLOW PATH OF CONTRIBUTING DRAINAGE AREA MUST NOT EXCEED 75 FEET.
4. WOVEN GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS OF IUM MATERIAL SPECIFICATION 592 GEOTEXTILE, TABLE 1, CLASS 1, WITH AN APPARENT OPENING SIZE OF 50.
5. COARSE AGGREGATE OPTIONS ARE CA-7, DISTRICT VULCAN MIX, OR APPROVED ALTERNATE. NO RECYCLED MATERIALS ARE ALLOWED.
6. FOLLOW THE REQUIRED PRETREATMENT MEASURES LISTED ON THE VOLUME CONTROL PRETREATMENT MEASURES DETAIL.
<table>
<thead>
<tr>
<th>Volume Control Practice</th>
<th>Void Space of Aggregate(^1)</th>
<th>Surface Storage(^2)</th>
<th>Growing Media(^3)</th>
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<td>Bioswale(^4)</td>
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<td>Infiltration Trench</td>
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<td>Storage Below Detention Basin Outlet</td>
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<td>Vegetated Filter Strip</td>
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<tr>
<td>Water Reuse System</td>
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</tbody>
</table>

\(^1\) A void ratio of 0.36 shall be used to calculate volume in CA-1 or CA-7 gradations, 0.25 for pea gravel or CA-16

\(^2\) Storage calculated using average-end method between surface elevation and elevation of overflow grate/check dam

\(^3\) Porosity of 0.25 shall be used to calculate volume in growing media

\(^4\) Surface storage only if check dams are installed
<table>
<thead>
<tr>
<th>Volume Control Practice</th>
<th>Pretreatment Measures</th>
</tr>
</thead>
</table>
| Bioretention Facility          | • Level spreader must be installed where runoff enters the facility as shallow concentrated flow to distribute the runoff as sheet flow over the entire facility.  
                                  • Vegetated filter strip, grass-lined channel, or sump must be installed upstream of the facility to filter out settleable particle and floatable materials.  
                                  • Where inflow velocities are greater than 3 ft/s, a vegetated filter strip or rock outlet protection must be installed to prevent erosion and distribute flows across the facility.  
                                  • Vegetated portions of the contributing drainage area must be stabilized.                                                                 |
| Bioswale                       | • Level spreader must be installed where runoff enters the facility as shallow concentrated flow to distribute the runoff as sheet flow over the entire facility.  
                                  • Vegetated portions of the contributing drainage area must be stabilized.                                                                                  |
| Constructed Wetlands           | • Where inflow velocities are greater than 3 ft/s, rock outlet protection should be provided to prevent erosion and distribute the flows into the facility.  
                                  • Vegetated portions of the contributing drainage area must be stabilized.                                                                                  |
| Drywell                        | • Filter screens must be installed on all roof drains directed toward the facility.  
                                  • For facilities that include inflow pipes, sump shall be installed at manhole immediately upstream of facility.                                           |
| Green Roof                     | • No Pretreatment measures required.                                                                                                                     |
| Infiltration Trench            | • Level spreader must be installed where runoff enters the facility as shallow concentrated flow to distribute the runoff as sheet flow over the entire facility.  
                                  • Vegetated filter strip, grass-lined channel, or sump must be installed upstream of the trench to filter out settleable particle and floatable materials.  
                                  • Where inflow velocities are greater than 3 ft/s, a vegetated filter strip or rock outlet protection should be provided to prevent erosion and distribute flows across the facility.  
                                  • Vegetated portions of the contributing drainage area must be stabilized.                                                                                  |
| Permeable Pavement             | • Vegetated filter strip, grass-lined channel, or sump must be installed upstream of the facility to filter out settleable particle and floatable materials.  
                                  • Vegetated portions of the contributing drainage area must be stabilized.                                                                                  |
| Storage Below Detention Basin Outlet | • Where inflow velocities are greater than 3 ft/s, rock outlet protection should be provided to prevent erosion and distribute the flows into the facility.  
                                      • Vegetated portions of the contributing drainage area must be stabilized.                                                                                 |
| Vegetated Filter Strip         | • Level spreader must be installed where runoff enters the facility as shallow concentrated flow to distribute the runoff as sheet flow over the entire facility.  
                                  • Vegetated portions of the contributing drainage area must be stabilized.                                                                                  |
| Water Reuse System             | • Filter screens must be installed on all roof drains directed toward the facility.  
                                  • For facilities that include inflow pipes, sump shall be installed at manhole immediately upstream of facility.                                           |

1. A porosity of 0.36 shall be used to calculate volume in CA-1 or or CA-7 gradation, 0.25 for CA-16 (volume above underdrain cre3dited at 50%).
2. Storage calculated using average-end method between surface elevation and elevation of overflow grate/check dam.
3. Porosity of 0.25 shall be used to calculate volume in growing media (volume above underdrain at 50%).
4. Surface storage only if check dams are installed.
NOTES:
1. ALL STORM, SANITARY, AND COMBINED SEWERS SHALL BE SHOWN WITH OUTLETS TO WATERWAY AND/OR DISTRICT INTERCEPTOR.
2. INDICATE OWNER(S) OF DRAINAGE SYSTEMS.
3. LABEL SIZES OF ALL PIPES SHOWN ON EXHIBIT.
4. ROUTING EXHIBIT SHALL BE PROVIDED ON COVER PAGE OF PLANS.
NOTES:
1. FINISHED FLOOR ELEVATIONS OF ADJACENT STRUCTURE SHALL BE ELEVATED AT LEAST ONE FOOT ABOVE PEAK 100-YEAR WATER SURFACE ELEVATION THROUGH OVERFLOW WEIR.
2. WOVEN GEOTEXTILE FABRIC SHALL MEET OR EXCEED STANDARDS OF IUM MATERIAL SPECIFICATION 592, TABLE 1, CLASS I, II, OR III.

NOT TO SCALE
NOTES:
1. CATCH BASINS MUST CONFORM TO ASTM C-478.
2. CATCH BASIN SECTIONS TO BE TONGUE AND GROOVED.
3. NON-STICK GROUT OR CEMENT TO BE USED ON ALL PENETRATIONS INSIDE AND OUTSIDE OF STRUCTURE.
4. ALL PIPE PENETRATIONS TO BE CORED, RUBBER BOoted AND INTERIOR GROUTED (NON-STICK) OR CEMENTED, ASTM C923 CONNECTORS IN COMBINED SEWER AREAS.
NOTES:
1. STRUCTURE AND BAFFLE WALL FABRICATED USING PORTLAND CEMENT CONCRETE.
2. RESTRICTORS LESS THAN 4" IN DIAMETER MUST USE CITY OF CHICAGO VORTEX RESTRICCTOR (SEE DETAIL)
3. BAFFLE WALL PERMANENTLY INSTALLED AS PRECAST OR CAST IN PLACE, (STEEL PLATE ACCEPTABLE IF PERMANENT).
4. PIPE TO STRUCTURE CONNECTIONS SHALL BE ASTM C923 IN COMBINED SEWER AREAS.

TECHNICAL GUIDANCE MANUAL
TYPICAL OUTLET CONTROL STRUCTURE (WALL) DETAIL

NOT TO SCALE
NOTES:
1. MAXIMUM DEPTH IN PARKING LOT SHALL NOT EXCEED 12 INCHES.
2. MINIMUM SLOPE ON PARKING LOT SHALL BE 1% (TYPICAL).
3. MAXIMUM SLOPE ON PARKING LOT SHALL BE 5% (TYPICAL).
4. APPROPRIATE WARNING SIGNAGE SHALL BE CLEARLY POSTED INDICATING FLOOD RISK (PAGE 28).
5. FINISHED FLOOR ELEVATION OF ADJACENT STRUCTURES SHALL BE AT LEAST ONE FOOT ABOVE PEAK 100-YEAR WATER SURFACE ELEVATION THROUGH OVERFLOW WEIR.

TECHNICAL GUIDANCE MANUAL

TYPICAL PARKING LOT DETENTION
NOTICE

THIS PARKING LOT IS USED FOR STORMWATER DETENTION

FLOOD DEPTHS MAY EXCEED 12 INCHES DURING HEAVY RAINS

PARK AT YOUR OWN RISK!

NOTES:
1. ONE SIGN SHALL BE POSTED PER 40 PARKING SPACES.
2. SIGNS SHALL BE POSTED IF PONDING IS GREATER THAN 8 INCHES.
NOTES:
1. CATCH BASINS MUST CONFORM TO ASTM C-478.
2. CATCH BASIN SECTIONS TO BE TONGUE AND GROOVED.
3. NON-STICK GROUT OR CEMENT TO BE USED ON ALL PENETRATIONS INSIDE AND OUTSIDE OF STRUCTURE.
4. ALL PIPE PENETRATIONS TO BE CORED, RUBBER BOOTED AND INTERIOR GROUTED (NON-STICK) OR CEMENTED, ASTM C923 CONNECTORS IN COMBINED SEWER AREAS.

VORTEX RESTRICTOR DETAIL: SECTION

NOTES:
1. TO BE USED IN PLACE OF RESTRICTORS LESS THAN 4 INCHES IN DIAMETER.
2. VORTEX RESTRICTOR DESIGNED TO FIT INTO 8-INCH DIAMETER OUTFLOW PIPE.
3. THE 3" VORTEX RESTRICTOR CAN BE OBTAINED FROM DWM CENTRAL DISTRICT AT 3901 S. ASHLAND AVE. THE CONTRACTOR SHOULD ARRANGE FOR PICK UP BY CONTACTING 312-747-1177 (7AM TO 3PM, M-F).
5. PULL ON RESTRICTOR TO VERIFY THAT A TIGHT FIT IS MADE.
NOTE:
1. FINISHED FIRST FLOOR AND LOW-ENTRY ELEVATIONS MUST BE ELEVATED AT LEAST TWO FEET ABOVE BASE FLOOD ELEVATION (BFE) PER FEMA.
2. LOWEST ADJACENT GRADE TO FOUNDATION MUST BE ELEVATED TO AT LEAST THE BFE AND EXTEND A MINIMUM OF 20 FEET BEYOND OUTSIDE FACE OF BUILDING.
3. CHECK BUILDING/FIRE CODE FOR EGRESS WINDOW REQUIREMENTS.
CONCRETE CRADLE

SECTION A-A

- EXISTING STRUCTURE
- ASTM C-923 BOOTED CONNECTION
- CONCRETE COLLAR
- ASTM C-923 BOOTED CONNECTION
- 1 3/4 PIPE LENGTH
- 12"
- #4 BARS
- UNDISTURBED SUBGRADE
- 4" MIN PIPE OD 4" MIN
- 6"
- 12 OD
- CONCRETE - 4000 psi @ 28 days
- THICKNESS OF CRADLE 1/2 PIPE DIAMETER + 12"
- BEAR ON UNDISTURBED SUBGRADE.
- #4 BARS *
- *REINFORCEMENT SHALL BE TWO #4 BARS FOR PIPE DIAMETER LESS THAN OR EQUAL TO 8 INCHES, FOUR #4 BARS FOR PIPE DIAMETER GREATER THAN 8 INCHES.

NOTE: TO BE USED WHEN CONNECTING TO DISTRICT INTERCEPTOR (SEE PAGE 38).

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7/1/15
STD. DKG. NO. 30
PAGE NO. 31
NOTES:
1. CONCRETE ENCASEMENT SHALL BE PROVIDED WHERE SEPARATION REQUIREMENTS CANNOT BE MET.
2. ENCASEMENT PLACED AGAINST UNDISTURBED NATIVE SOIL, OR FILL COMPACTED TO 90% RELATIVE COMPACTION.
3. NOT FOR PIPE TO PIPE CONNECTIONS.

TECHNICAL GUIDANCE MANUAL

CONCRETE ENCASEMENT DETAIL

53
DOG HOUSE MANHOLE PROFILE

NOTES:
1. EXISTING SANITARY OR COMBINED SEALER MUST BE 15" DIAMETER OR LARGER FOR "DOG HOUSE" MANHOLE USE.
2. INTEGRAL POUR FOR BASE AND BENCH. (NO PRECAST BASE)
3. ALL POUR-IN-PLACE CONCRETE MUST BE 4000 PSI NON-SHRINK MIX.
4. EXTERNAL DROP CONNECTION MUST BE PROVIDED IF INVERT OF CONNECTING SEALER IS 24" OR MORE ABOVE THE INVERT OF OUTLET. (SEE SEPARATE MWRD STANDARD DROP DETAIL)
5. MANHOLE DIAMETER MINIMUM 60" INCREASES BASED ON THE EXISTING SEALER DIAMETER.
6. CONCRETE BONDING AGENT MUST NOT BE APPLIED TO ALL INTERFACES OF PRECAST CONCRETE SURFACES WITH POUR-IN-PLACE CONCRETE.
7. A CURVED INTERNAL ARCH FORM MUST BE USED DURING SEALER CONCRETE FILL. NO BRICK, MORTAR, OR DEBRIS IS TO BE USED IN PLACE OF CONSOLIDATED CONCRETE.
8. DEBRIS MUST NOT BE ALLOWED TO ENTER THE SEALER SYSTEM AT ANY TIME DURING CONSTRUCTION.
9. ALL DIMENSIONS NOTED ARE MINIMUM ALLOWED.
10. THE STRUCTURE MUST NOT BE BACKFILLED FOR A MINIMUM OF 24 HOURS AFTER CONSTRUCTION.

SECTION A - A

"DOG HOUSE" MANHOLE STRUCTURE BARREL (PRECAST, SEE NOTE 5)
ARCH PRECAST IN STRUCTURE BARREL FIT EXISTING SEALER PLUS 3" (SEE NOTES 6 AND 7)
EXISTING SANITARY COMBINED SEALER (SEE NOTE 1)
MH BASE 8" BELOW THE INVERT OF THE EXISTING SEALER AND EXTEND AROUND BARREL 12" (SEE NOTES 2 AND 3)

SECTION B - B

CONCRETE COLLAR

RUBBER BOOT CONNECTION CONFORMING TO ASTM C-923
SANITARY/COMBINED SEALER CONNECTION (IF APPLICABLE, SEE NOTE 4)
4% SLOPE TO DRAIN TO SPRING-LINE OF EXISTING SEALER (SEE NOTES 2 AND 3)

COMPACTED AGGREGATE OR BEDROCK 6" THICK
NATURAL UNDISTURBED SOIL

TECHNICAL GUIDANCE MANUAL

DOG HOUSE MANHOLE
NOTES:
1. REQUIRED FOR 2FT. OR GREATER DROP TO SANITARY OR COMBINED SEWER.
2. MINIMUM WALL THICKNESS IS 6" FOR CAST IN PLACE CONCRETE STRUCTURES AND 1/12 MANHOLE DIAMETER FOR PRECAST CONCRETE STRUCTURES.
3. CONCRETE FOR ENCASTEMENT SHALL BE 4,000 PSI @ 28 DAYS.
4. FORCEMAIN FLOW NOT ALLOWED AS INCOMING SEWER, SEE FORCEMAIN DISCHARGE DETAIL.

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<thead>
<tr>
<th>DIAMETER (INCHES)</th>
<th>D1</th>
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STEEL PLATE DAM

NOTES:
1. PLATE AND FASTENERS MUST BE FABRICATED IN STAINLESS STEEL, DUCTILE IRON, OR EQUIVALENT WATERPROOF/WEATHER PROOF MATERIALS.
2. BOLTS TACK WELDED TO PLATE.
3. ANCHOR EMBEDMENT: 3" MIN.
RIGID PIPE INSTALLATION DETAIL

NOTES:
1. FOR QUALIFIED SEWER CONSTRUCTION ONLY.
2. SHORING, OR EQUIVALENT PROTECTIVE SYSTEM, REQUIRED FOR TRENCHES OF 5' DEPTH OR GREATER, OR AS REQUIRED BY MUNICIPALITY.

FLEXIBLE PIPE INSTALLATION DETAIL

NOT TO SCALE

TECHNICAL GUIDANCE MANUAL
RIGID AND FLEXIBLE PIPE INSTALLATION DETAIL

7/1/15
STD. DWG. NO. 34
PAGE NO. 35
COAT MANHOLE INTERIOR WITH APPROVED EPOXY COATING OR USE H₂S RESISTANT CONCRETE

NO CONNECTIONS ALLOWED

TOP BENCH SHALL BE 2" ABOVE SPRINGLINE OR PIPE CONCRETE COLLAR

2-45° BENDS

FLOW

OUTLET PIPE

CENTELINE OF FORCE MAIN PIPING NOT ALLOWED IN EITHER QUADRANT ADJOINING THE MANHOLE OUTLET

INSTALL CONC. BENCH IN BOTTOM OF MANHOLE AS SHOWN TO EXISTING SEWER OUTLET

4" BEDDING

PRECAST RUBBER BOOT PER ASTM C923

CONCRETE SHALL BE MINIMUM OF 4000 PSI @28 DAYS FILLED UNDER PIPE TO UNDISTURBED GROUND. CONCRETE TO EXTEND TO FIRST JOINT IN NORMAL WIDTH OF TRENCH.

SECTION A-A

PLAN VIEW

NOTES:
1. DROP CONNECTIONS ARE NOT ALLOWED.
2. MAXIMUM OF ONE FORCemain CONNECTION PER MANHOLE; MULTIPLE CONNECTIONS NOT ALLOWED.

TECHNICAL GUIDANCE MANUAL

TYPICAL FORCemain DISCHARGE TO GRAVITY MANHOLE

7/1/12

STD. DWG. NO. 35

PAGE NO. 36
NOT TO SCALE

TECHNICAL GUIDANCE MANUAL

LARGE GREASE BASIN (>500 GALLONS)

NOTES:
1. IF RIM ELEVATION IS LOWER THAN FLOOD PROTECTION ELEVATION, A WATERTIGHT FRAME WITH BOLTED DOWN LID SHALL BE USED.
2. DISHWASHER DISCHARGE SHALL BYPASS GREASE BASIN.
3. TRIPLE BASINS ARE ALSO ACCEPTABLE.
Detailed plans drawn to scale with appropriate notes, must be included with the permit application.

Connection into the Drop Pipe Tee

Connection to Manhole with Stub

Connection Directly to Manhole without Stub

Brick Mortar Bulkhead 1/2 Diameter

MH Frame & Cover

NOTES:
1. A manhole shall be provided on the local sewer adjacent to the district manhole and within the row parallel to the district interceptor. Clear space between manholes shall not be less than 3 feet and more than 10 feet. Connections will not be permitted at locations where existing district manholes are not provided. Manhole shall have a minimum diameter of 48 inches. Drop manholes shall be provided where needed. Two bulkheaded stubs of minimum 8-inch diameter shall be provided.
2. Connection sewer shall be extra strength vitrified clay pipe of the same size as existing tee or stub. Connection pipe shall be provided with concrete collar at the district manhole, and a concrete crudgel for at least 1/4 pipe length, as shown. Structural grade concrete with a minimum 28 day compressive strength of 4000 psi shall be used.
3. When making a connection to a district manhole where a stub is not provided, a hole shall be core-drilled at the springline. Hole diameter shall be no more than one inch larger than the outside diameter of connecting pipe. Non-shrink grout shall be used to fill annular space between pipe and hole.
4. For connections to a district drop pipe below the stub, a vitrified clay pipe cross shall be used and joined with existing drop pipe, with pipe stubs and collars, to form a watertight joint. Connection run of cross shall be no more than two nominal pipe sizes larger than drop pipe.
5. Any debris entering manhole during construction shall be removed immediately. Any manhole steps that are damaged shall be replaced.
6. All elevations shall be clearly marked. "Record" elevations of district facilities may be used but field survey is recommended for critical elevations.
7. During construction of proposed connection, manhole shall be supported according to details prepared, signed, and sealed by a licensed structural engineer.
8. Dowels shall be used to connect concrete collar and crudgel to the manhole.
9. These connection details shall be used for sewers up to a 25-inch diameter. Connection details for larger sewers shall be prepared based on site conditions and configuration of existing manhole/structure.

INSTRUCTIONS FOR USE:
1. Select the method of connection.
2. Provide all critical invert elevations.
3. Cross out all connection types that are not applicable and clearly highlight structure on plans that refer to this detail.
UNDISTURBED EARTH-SHAPE TO PROVIDE UNIFORM BEARING FOR 1/4 OF BARREL CIRCUMFERENCE

CONNECT TO EXIST. SERVICE PIPE OR PLUG

TRENCH WALL

MAXIMUM SLOPE (SLOPE TO BE LESS THAN 1:1 WHEN NECESSARY TO SECURE BEDDING IN UNDISTURBED EARTH)

STANDARD WYE OR TEE - BARREL SIZE TO BE AS CALLED FOR ON PLANS, OR AS OTHERWISE SPECIFIED

BEDDING AS SPECIFIED

SECTION A-A
TECHNICAL GUIDANCE MANUAL

TYPICAL SANITARY MANHOLE 'A' AND 'B' DETAIL

1. MANHOLES TO HAVE PRECAST "RUBBER BOOTS" CONFORMING TO ASTM C-923 AT ALL PIPE CONNECTIONS.
2. SANITARY MANHOLES SUBJECT TO SATURATION SOIL CONDITIONS OR SURFACE SUBMERGENCE SHALL BE EQUIPPED WITH CHIMNEY SEALS AND WATER TIGHT BOLTED DOWN MANHOLE COVERS.
3. WASTIC SEALANT OR RUBBER GASKET SEAL MUST BE APPLIED BETWEEN CONCRETE & FLANGE OF FRAME BEFORE (O BOLTS) ARE TIGHTENED.
4. SAFETY LANDINGS REQUIRED FOR MANHOLE GREATER THAN 28 FEET DEPTH (RIM TO INVERT). MAXIMUM VERTICAL SPACING OF SAFETY LANDING IS 20 FEET.
5. FOR DROP CONNECTIONS, USE DROP CONNECTION MANHOLE DETAIL.
6. FOR GROUND CONNECTIONS GREATER THAN 15 INCHES, USE OILHOUSE MANHOLE DETAIL.

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<th>MATERIALS FOR WALLS</th>
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TECHNICAL GUIDANCE MANUAL

SMALL GREASE BASIN (<500 GALLONS)

NOTES:
1. IF RIM ELEVATION IS LOWER THAN FLOOD PROTECTION ELEVATION, A WATERTIGHT FRAME WITH BOLTED DOWN LID SHALL BE USED.
2. DISHWASHER DISCHARGE SHALL BYPASS GREASE BASIN.