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<td>Sewer</td>
<td>Notes</td>
<td>1/1/2021</td>
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<td>Pipe Separation Requirements</td>
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1. SEWER AND WATER SYSTEMS ARE TO BE CONSTRUCTED IN GENERAL ACCORDANCE WITH ALL CITY OF KINGS MOUNTAIN AND NCDEQ REGULATIONS, REFERENCE SEWER AND WATER STANDARDS AND PROJECT SPECIFICATIONS.

2. SEWER AND WATER CONSTRUCTION ON THIS SITE IS AUTHORIZED BY PERMITS ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ). THE WORK IS SUBJECT TO INSPECTION AT ALL TIMES BY REPRESENTATIVES OF NCDEQ, THE CITY, AND THE ENGINEER OF RECORD. THE PERMITS REQUIRE CERTIFICATION OF COMPLETION BY THE ENGINEER OF THE WATER AND SEWER SYSTEMS PRIOR TO THE ISSUANCE OF FINAL OPERATIONAL APPROVAL BY NCDEQ.

3. CONTRACTOR SHALL VERIFY THE ACTUAL LOCATION AND ELEVATION FOR ALL UTILITIES, DRAINAGE, AND OTHER UNDERGROUND FACILITIES, AND SHALL NOTIFY THE ENGINEER OF RECORD OF ANY DISCREPANCY OR CONFLICTS PRIOR TO CONSTRUCTION.

4. CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF LOCATING AND MARKING ALL EXISTING UNDERGROUND UTILITIES.

5. CONTRACTOR SHALL SUBMIT AT LEAST THREE (3) COPIES OF SHOP DRAWINGS FOR ALL MATERIALS TO THE CITY OF KINGS MOUNTAIN AND THEIR ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

6. CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION CONFERENCE ON SITE WITH THE ENGINEER OF RECORD, CITY, AND OTHER INTERESTED PARTIES PRIOR TO CONSTRUCTION.

7. CONNECTION TO ANY EXISTING LINES SHALL BE BY THE CONTRACTOR IN THE PRESENCE OF CITY INSPECTION PERSONNEL. PLUG NEW CONNECTION UNTIL CONSTRUCTION AND TESTING HAS BEEN COMPLETED, INSPECTED BY THE ENGINEER OF RECORD AND THE CITY, AND FINAL CONNECTION IS AUTHORIZED.

8. MAINTAIN 18 INCH VERTICAL SEPARATION BETWEEN STORM AND SANITARY SEWER / WATER MAIN OR INSTALL DUCTILE IRON PIPE ON SANITARY SEWER / WATER MAIN WITHIN 10 FEET EACH SIDE OF CROSSING.

9. UTILITY SERVICES SHALL NOT BE LOCATED UNDER DRIVEWAYS.

10. THE CITY OF KINGS MOUNTAIN SHALL OWN AND MAINTAIN THE PROPOSED WATER AND SANITARY SEWER LINE UPTO COMPLETION, INSPECTION, APPROVAL, AND ACCEPTANCE.

11. THE PROPOSED WATER AND SEWER LINES BEYOND THE METER AND/OR MAIN LINE CONNECTION POINTS WILL NOT BE OWNED, OPERATED, OR MAINTAINED BY THE CITY OF KINGS MOUNTAIN.

12. WATER MAINS, WITHIN OR PARALLEL TO ROAD RIGHTS OF WAY, MUST HAVE A MINIMUM OF 36" COVER MEASURED FROM THE ROAD EDGE OF PAVEMENT ELEVATION.

13. PRIOR TO BEGINNING CONSTRUCTION OF ANY WATER AND SEWER INFRASTRUCTURE, COPIES OF THE NCDEQ PERMITS TO CONSTRUCT MUST BE PROVIDED TO THE CITY OF KINGS MOUNTAIN.

14. ALL UNDERGROUND PIPING TO HAVE A 14 GAUGE INSULATED SOLID COPPER WIRE INSTALLED PER CITY SPECIFICATIONS TO AID IN LOCATING THE PIPE FOR MAINTENANCE PURPOSES.

15. ALL SERVICE LINES REQUIRE INDIVIDUAL CONNECTIONS TO THE MAIN. MULTIPLE SERVICE LINES INTERCONNECTING WILL NOT BE ALLOWED.
1. FIRE HYDRANTS SHALL BE CITY OF KINGS MOUNTAIN STANDARD.
2. ALL WATER MAIN VALVES MUST OPEN COUNTERCLOCKWISE IN CONFORMANCE WITH CITY OF KINGS MOUNTAIN STANDARDS.
3. BLOCKING SHALL BE INSTALLED AT ALL BENDS, TEES, VALVES, REDUCERS, BLOW-OFFS, AND HYDRANT LOCATIONS, UNLESS ALTERNATIVES ARE SHOWN ON DETAILS.
4. WATER MAINS LESS THAN 4 INCH IN DIAMETER SHALL BE PVC ASTM D2241 SDR 13.5, CLASS 315. ALL MAINS 4 INCH TO 12 INCH SHALL BE AWWA C-900, PRESSURE CLASS 200 PVC SDR14. FITTINGS 4 INCH AND LARGER SHALL BE MECHANICAL JOINT CAST IRON. FITTINGS LESS THAN 4 INCH SHALL BE SLIP JOINT PVC PER SPECIFICATIONS. PVC PIPING SHALL BE INSTALLED WITH APPROVED COPPER LOCATING WIRE.
5. ASBESTOS CEMENT PIPE SHALL NOT BE USED IN POTABLE WATER SYSTEMS EXCEPT IN THE REPAIR OF EXISTING ASPHALT CEMENT LINES.
6. DIP SHALL BE IN ACCORDANCE WITH AWWA C150/A21.50 & AWWA C151/A21.51.
7. NO FLUSHING DEVICE SHALL BE DIRECTLY CONNECTED TO ANY SEWER SYSTEM.
8. CHAMBERS, PITS OR MANHOLES CONTAINING VALVES, BLOW-OFFS, METERS, AIR RELIEF VALVES, OR OTHER SUCH APPURTENANCES TO A DISTRIBUTION SYSTEM, SHALL NOT BE CONNECTED DIRECTLY TO ANY STORM DRAIN OR SANITARY SEWER.
9. INSTALLATION OF WATER MAINS AND APPURTENANCES SHALL BE CONDUCTED IN ACCORDANCE SECTION C OF THE AWWA STANDARDS AND/OR MANUFACTURER’S RECOMMENDED INSTALLATION PROCEDURES.
10. A CONTINUOUS AND UNIFORM BEDDING SHALL BE PROVIDED IN THE TRENCH FOR ALL BURIED PIPE. BACK-FILL MATERIAL SHALL BE TAMPED IN LAYERS AROUND THE PIPE AND TO A SUFFICIENT HEIGHT ABOVE THE PIPE TO ADEQUATELY SUPPORT AND PROTECT THE PIPE. STONES, OTHER THAN CRUSHED BEDDING, SHALL NOT COME INTO CONTACT WITH THE PIPE AND SHALL NOT BE WITHIN SIX (6) INCHES OF THE PIPE.
11. ALL WATER MAINS SHALL MEET THE CITY OF KINGS MOUNTAIN WATER SPECIFICATIONS FOR PIPE TRACING WIRE.
12. VALVES CANNOT BE LOCATED IN SIDEWALKS, CURBING, DRIVEWAYS, OR ASPHALT AREAS UNLESS APPROVED BY THE CITY.
13. REFER TO CITY OF KINGS MOUNTAIN STANDARD SPECIFICATIONS AND DETAILS REGARDING SERVICE LINE PIPE MATERIAL.
14. ALL SERVICE LINES REQUIRE INDIVIDUAL CONNECTIONS TO THE MAIN. MULTIPLE SERVICE LINES INTERCONNECTING WILL NOT BE ALLOWED.
1. SEWER FORCE MAINS LESS THAN 4 INCH IN DIAMETER SHALL BE PVC ASTM-D2241 SDR13.5 CLASS 315. ALL MAINS 4 INCH TO 12 INCH SHALL BE AWWA C-900, PRESSURE CLASS 200 PVC SDR14. FITTINGS 4 INCHES AND LARGER SHALL BE MECHANICAL JOINT CAST IRON. FITTINGS LESS THAN 4 INCH SHALL BE SLIP JOINT PVC PER SPECIFICATIONS. PVC PIPING SHALL BE INSTALLED WITH APPROVED COPPER LOCATING WIRE.

2. SANITARY SEWER MAINS SHALL BE PVC (ASTM D3034–SDR 35) WITH STONE BEDDING EXCEPT WHERE DUCTILE IRON PIPE OR LONG SPAN STEEL PIPE IS SHOWN. DUCTILE IRON PIPE SHALL BE BITUMINOUS COATED, CEMENT LINED WITH PUSH-ON JOINTS CONFORMING TO ASA A21.54 PC350. TRANSITIONAL COUPLINGS SHALL BE USED FOR PVC/DI SEWER CONNECTIONS. SEWER SERVICES SHALL BE SCHEDULE 40 PVC. LONG SPAN STEEL PIPE SHALL BE COATED ON BOTH SIDES ON BOTH SIDES WITH 4 MIL EPOXY. ANY SEWER LINE PLACED 16 FEET OR GREATER IN DEPTH SHALL BE DUCTILE IRON PIPE.

3. ALL SEWER MANHOLES SHALL BE PRE–CAST CONCRETE WITH INTEGRALLY CAST WATERTIGHT CONNECTIONS.

4. SANITARY SEWER LATERALS SHALL BE 4 INCH DIAMETER EXCEPT AS SPECIFICALLY NOTED.

5. CONTRACTOR SHALL STABILIZE ALL OUT OF STREET GRAVITY SEWER RIGHTS OF WAY WITH GRASS.

6. DIP SHALL BE IN ACCORDANCE WITH AWWA C150/A21.50 & AWWA C151/A21.51.

7. A CONTINUOUS AND UNIFORM BEDDING SHALL BE PROVIDED IN THE TRENCH FOR ALL BURIED PIPE. BACK–FILL MATERIAL SHALL BE TAMPAED IN LAYERS AROUND THE PIPE AND TO A SUFFICIENT HEIGHT ABOVE THE PIPE TO ADEQUATELY SUPPORT AND PROTECT THE PIPE. STONES, OTHER THAN CRUSHED BEDDING, SHALL NOT COME INTO CONTACT WITH THE PIPE AND SHALL NOT BE WITHIN SIX (6) INCHES OF THE PIPE.

8. ALL OFF–SITE SEWER MANHOLES MUST BE A MINIMUM OF TWO (2) FEET ABOVE FINISHED GRADE OR THE 100 YEAR FLOOD PLAIN ELEVATION. ALL MANHOLE TOPS ARE TO BE BOLTED DOWN TO THE PRE–CAST HOUSINGS.

9. MANHOLES MUST NOT BE PLACED WITHIN THE WHEEL–PATHS OF ANY ROADWAY TRAVELING LANES.

10. SEWER SERVICE LATERALS CONNECTING TO THE MAINLINE WITHIN 10’ OF A MANHOLE MUST GO DIRECTLY INTO THE MANHOLE.

11. ALL SERVICE LINES REQUIRE INDIVIDUAL CONNECTIONS TO THE MAIN. MULTIPLE SERVICE LINES INTERCONNECTING WILL NOT BE ALLOWED.

2. WATER MAINS AND SEWER FORCE MAINS MUST BE HYDROSTATICALLY TESTED PER THE CITY OF KINGS MOUNTAIN SPECIFICATIONS AND UNDER THE SUPERVISION OF A CITY INSPECTOR AND THE ENGINEER OF RECORD.

3. DISINFECT WATER LINES AND PROVIDE ACCEPTABLE BACTERIOLOGICAL TEST FROM A CERTIFIED TESTING LABORATORY FOR USE WITH THE ENGINEERS CERTIFICATION OF COMPLETION. A MINIMUM OF TWO (2) SAMPLES, COLLECTED AT LEAST TWENTY-FOUR (24) HOURS APART, ARE TO BE TAKEN FROM EACH SAMPLING SITE FOR TOTAL COLIFORM ANALYSIS AND TOTAL CHLORINE RESIDUAL. THE NUMBER OF TEST SITES MUST INCLUDE ALL DEAD-END LINES AND SHALL BE COLLECTED A MINIMUM OF EVERY 1,200 LINEAR FEET.

4. SECURE FINAL OPERATIONAL APPROVAL FROM THE CITY OF KINGS MOUNTAIN AND NCDENR PRIOR TO ACTIVATION OF THE SYSTEM.

5. TEST SANITARY SEWER LINES FOR DEFLECTION WITH A 5% MANDREL NOT LESS THAN 30 DAYS AFTER COMPLETION OF BACKFILL. PERFORM LOW PRESSURE AIR TESTING IN ACCORDANCE WITH ASTM C-828 AND C924 ON ALL SEWER MAINS.

6. TRENCH BACKFILL AND COMPACTION TESTING SHALL BE PERFORMED BY A CERTIFIED SOILS LABORATORY UNDER AL AREA WITHIN ROAD AND RAILWAY RIGHTS-OF-WAY. BACKFILL MATERIAL FROM THE BOTTOM OF TRENCH TO WITHIN SIX (6) INCHES OF THE SUBGRADE SHALL HAVE A MINIMUM DRY DENSITY OF 95% AS DEFINED BY THE STANDARD PROCTOR TEST. ALL MATERIAL WITHIN THE TOP 6 INCHES OF THE SUBGRADE LEVEL SHALL HAVE AN IN PLACE DENSITY OF 100%.

7. THE CONTRACTOR SHALL SUPPLY THE ENGINEER WITH SEWER AS-BUILTS (LOCATION, ELEVATION, LENGTH, AND SLOPE) PREPARED BY A REGISTERED LAND SURVEYOR AND WATER SERVICE MEASUREMENTS SUITABLE FOR PREPARATION OF FINAL AS-BUILTS.
NOTES:
1. BOTTOM SECTION TO BE CENTERED OVER NUT, NOT TO BEAR ON VALVE BODY.
2. PROVIDE CLEARANCE BETWEEN VALVE BOX/BRICK AND THE VALVE.
3. WHEN OPERATING NUT DEPTH EXCEEDS 4'-0" BELOW FINISHED GRADE, PROVIDE EXTENSION STEM WITH STD. 2" SQ. OPERATING NUT IN TOP SECTION OF VALVE BOX. EXTENSION STEM SHALL BE SIZED AS RECOMMENDED BY THE VALVE MANUFACTURER.
NOTES
1. VALVE BOXES SHALL BE CAST IRON, SCREW TYPE WITH 5-1/4" SHAFT.
2. THE BOXES SHALL BE ADJUSTABLE TO FIT THE DEPTH OF EARTH COVER OVER THE VALVE.
3. VALVE BOXES SHALL HAVE "WATER" CLEARLY MARKED ON TOP COVER.
4. ALL VALVE BOXES SHALL HAVE A 27" DIA, 3,000 PSI CONCRETE PROTECTOR.

CITY OF KINGS MOUNTAIN
WATER RESOURCES
STANDARDS

WATER VALVE BOX
STANDARD DETAIL

STD. NO  DATE
2.02  1/1/2021

REVISIONS
NO  DATE  DESCRIPTION
NOTES
1. 5–1/4" DROP LID WITH 4" SKIRT
2. HEAVY-DUTY RATING ASTM A48 CL35
**NOTES**

1. ALL BOLTS ARE TO BE STAINLESS STEEL.
2. INSTALLATION IS TO INCLUDE TEST PLUG. PRIOR TO TAPPING THE LINE CONTRACTOR MUST PROVIDE A HYDROSTATIC TEST ON THE SLEEVE PER CITY OF KINGS MOUNTAIN SPECIFICATIONS.
3. SIZE ON SIZE TAPS FOR ABESTOS CEMENT ARE TO BE MUELLER H619 MJ TAPPING SLEEVES OR APPROVED EQUAL.
SECTION VIEW
N.T.S.

NOTES
1. FIRE HYDRANTS SHALL COMPLY WITH ANSI/AWWA C502 AND SHALL BE MUELLER CO. SUPER CENTURION 250 OR AMERICAN DARLING MARK 73. HYDRANTS SHALL BE PAINTED YELLOW IN COLOR.
2. HYDRANTS SHALL HAVE NATIONAL STANDARD SCREW THREADS AND OPERATING NUT AND ALL VALVES SHALL OPEN BY TURNING COUNTER-CLOCKWISE.
3. CONTRACTOR MAY SUBSTITUTE CONCRETE RESTRAINT BLOCKING AT THE HYDRANT ELBOW WITH MECHANICAL JOINT RESTRAINTS (MEGALUG SERIES 1100). A BLOCK MUST BE INSTALLED TO SUPPORT THE ELBOW.
NOTES:
1. INSTALL CONNECTOR LINE FROM EXISTING BLOW-OFF ASSEMBLY TO NEW MAIN FOR FILLING, TESTING AND STERILIZING NEW MAIN.
2. CONNECTOR LINE TO BE ASSEMBLED WITH CHECK VALVE AND TO BE OPERATED INDEPENDENT OF EXISTING MAIN.
3. BLOCKING ON EXISTING LINE NOT TO BE DISTURBED.
4. FINAL CONNECTION TO EXISTING MAIN TO BE MADE ONLY AFTER TOTAL PROJECT IS ACCEPTED BY THE CITY.
5. VALVES ON EXISTING SYSTEM TO BE OPERATED BY CITY PERSONNEL ONLY.
6. ONLY ONE CONNECTION WILL BE ALLOWED BETWEEN THE EXISTING SYSTEM AND THE NEW CONSTRUCTION UNTIL TESTING AND DISINFECTION ARE COMPLETE.
<table>
<thead>
<tr>
<th>Dia. of Main (In.)</th>
<th>Flow Required (GPM)</th>
<th>Min. Orifice Size (In.)</th>
<th>Recommended Blow-off Size (In.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>25</td>
<td>0.56</td>
<td>3/4</td>
</tr>
<tr>
<td>2 1/2</td>
<td>40</td>
<td>0.71</td>
<td>1</td>
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<tr>
<td>3</td>
<td>60</td>
<td>0.87</td>
<td>1 1/4</td>
</tr>
<tr>
<td>4</td>
<td>100</td>
<td>1.10</td>
<td>1 1/2</td>
</tr>
</tbody>
</table>

* Under most situations, the above table can be used. But, in some areas where the static pressures are exceedingly high, smaller blow-offs may be necessary.

Notes:
1. 24" diameter x 6" thick precast concrete pads may be used in lieu of 18"x18"x6" cast in place pads.
2. On 2" water mains provide blocking at elbow in place of blocking at plug.
3. See chart for recommended blow-off size.
4. All fittings to be brass.
CONCRETE BLOCKING DIMENSIONS
LxWxD = (4’ WIDTH OF DITCH) x 16” x 16”
OR AS DIRECTED BY ENGINEER

SCH. 80 GALV. STEEL PIPE PER
BLOW-OFF SIZE

PLAN VIEW
N.T.S.

SECTION A-A
N.T.S.

NOTES:
1. 24" DIAMETER X 6" THICK PRECAST CONCRETE
   PADS MAY BE USED IN LIEU OF 18”X18”X6”
   CAST IN PLACE PADS.
2. SEE CHART FOR RECOMMENDED BLOW-OFF
   SIZE.
3. ALL FITTINGS TO BE BRASS.

END OF PIPE
THREADED W/ COUPLING

TOP SECTION VALVE
BOX (TYP.)

STANDARD WATER
VALVE BOX

SLIP JOINT
PLUG W/ TAP
AS REQUIRED

GATE VALVE

ELBOW

18”X18”X6” CONC.
PADS (TYP.)

SEE CHART FOR BLOW-OFF
SIZE (TAP, VALVE & ELBOW TO
MATCH REQ. BLOW-OFF SIZE)

ELEVATION VIEW
N.T.S.

DIA. OF MAIN
(IN.)

FLOW REQUIRED
(GPM)

MIN. ORIFICE SIZE
(IN.)

RECOMMENDED
BLOW-OFF SIZE
(IN.)

6
8
10
12

220
390
610
880

1.65
2.21
–
–

2
2-1/2
4
4

* UNDER MOST SITUATIONS, THE ABOVE TABLE CAN
BE USED. BUT, IN SOME AREAS WHERE THE STATIC
PRESSURES ARE EXCEEDINGLY HIGH, SMALLER BLOW-
OFFS MAY BE NECESSARY.

CITY OF KINGS MOUNTAIN
WATER RESOURCES
STANDARDS

WATER BLOW-OFF
6" TO 12"

STD. NO.
2.11

DATE
1/1/2021

REVISIONS
NO.
DATE
DESCRIPTION

THE HISTORICAL CITY
1874 NC

KINGS MOUNTAIN
1. A 14 GAUGE INSTALLED SOLID COPPER WIRE SHALL BE LAID ON TOP OF THE PVC PIPE TO AID IN LOCATING THE PIPE FOR MAINTENANCE PURPOSES. THE WIRE SHALL BE SECURED TO THE PIPE WITH DUCT TAPE NEAR EVERY BELL AND AT THE CENTER OF EACH PIPE JOINT. THE WIRE SHALL BE FASTENED SECURELY TO A CAST IRON FITTING AT EACH MAIN LINE VALVE AND FIRE HYDRANT AND TO SERVICE LINES AS DIRECTED.

- NOTE: METER BOXES TO BE LOCATED OUTSIDE OF THE RIGHT OF WAY

**SHORT SIDE SERVICE CONNECTION**

- WATER MAIN TAP (SEE DETAIL 2.13/2.14)
- 1" OR 3/4" SDR9 HDPE (POLY) TUBING
- METER BOX (SEE DETAIL 2.13/2.14)
- 36" MIN. COVER
- 36" MIN. COVER
- WATER MAIN TAP (SEE DETAIL 2.13/2.14)
- 1" OR 3/4" SDR9 HDPE (POLY) TUBING
- DRY BORE—NO CASING
- METER BOX (SEE DETAIL 2.13/2.14)

- NOTE: METER BOXES TO BE LOCATED OUTSIDE OF THE RIGHT OF WAY.

**LONG SIDE SERVICE CONNECTION**

- WATER MAIN TAP (SEE DETAIL 2.13/2.14)
- 1" OR 3/4" SDR9 HDPE (POLY) TUBING
- DRY BORE—NO CASING
- METER BOX (SEE DETAIL 2.13/2.14)

- NOTE: METER BOXES TO BE LOCATED OUTSIDE OF THE RIGHT OF WAY.

NO DRY BORE PIT REQUIRED.

**CITY OF KINGS MOUNTAIN**

**WATER RESOURCES**

**STANDARDS**

**3/4" & 1" WATER SERVICE CONNECTION**

**STD. NO** | **DATE**
---|---
2.15 | 1/1/2021
CITY OF KING'S MOUNTAIN
WATER RESOURCES
STANDARDS

WATER METER & SERVICE
WITH BYPASS
2"

NOTES:
1. METER TO BE OBTAINED FROM THE CITY.
2. INSTALLER MAY SUBSTITUTE TYPE "K" SOFT COPPER FOR BRASS SHOWN, PROVIDED APPROPRIATE FITTINGS AND VALVES ARE USED.
3. COPPER METER SETTER TO BE MCDONALD NL LARGE SIZE METER SETTER - 720B8712WDF 775 (FNPTxFNPT) OR APPROVED EQUAL.
4. NO FIELD ADJUSTMENTS OF METER SETTER IS PERMITTED.
5. ONLY 2" METER SETTER IS TO BE INSTALLED.
NOTES:
1. MANHOLE TO CONFORM WITH ASTM C478, LATEST REVISION, EXCEPT AS MODIFIED BELOW.
2. MANHOLE BASE TO BE REINFORCED WITH A MINIMUM AREA OF 0.20 SQ. IN. PER LINEAR FOOT EACH WAY AND BENT UP AT WALLS 10" AND SPliced TO A WALL REINFORCING. WALL REINFORCING TO BE A MINIMUM OF 0.12 SQ. IN. PER LINEAR FOOT. BOTH TONGUE AND GROOVE OF JOINTS SHALL HAVE REINFORCING EQUAL IN AREA TO MINIMUM OF WALL SECTION.
3. ALL JOINTS SHALL CONFIRM TO ASTM C443.
4. STEPS SHALL BE PLASTIC PER PROJECT STANDARDS.
5. ALL PIPE OPENINGS TO BE NO GREATER THAN 3" LARGER THAN THE O.D. OF PIPE AND ADDITIONALLY REINFORCED WITH A MINIMUM OF 0.20 SQ. IN. OF STEEL AT 90 DEGREES. PIPE TO BE CENTERED IN OPENINGS AND SUPPORTED WITH A CONCRETE COLLAR 12" GREATER THAN THE O.D. OF PIPE FOR ONE FOOT FROM THE WALL. CONCRETE SHALL BE REINFORCED FROM THE OUTSIDE TO BECOME AN INTEGRAL PART OF THE MANHOLE INVERT OR TO A POINT FLUSH WITH INSIDE WALL.
6. ALL SURFACES SHALL BE SMOOTH EVEN TEXTURED WITH A MINIMUM OF HONEYCOMB, FINS AND OTHER IMPERFECTIONS.
7. LIFTING HOLES SHALL BE PLUGGED WITH EXPANSION GROUT FROM OUTSIDE PRIOR TO BACKFILLING.
8. INVERTS IN 5' DIA. MANHOLES TO BE 3600 PSI READY MIX CONCRETE IN LIEU OF BRICK.
9. STEPS IN 5' DIA. MANHOLES TO BE OVER WIDEST SHELF.
10. ALL MASONRY MORTAR SHALL BE PORTLAND CEMENT 1:3 MIX.
11. CARE MUST BE TAKEN TO FORM A SMOOTH FINISHED TROUGH FROM ENTRANCE PIPES TO EXIT PIPE, AND IN CURVED MANHOLES THE TROUGH MUST BE A SMOOTH CIRCULAR ARC TANGENT TO THE INSIDE WALLS OF THE PIPES AT THEIR ENDS.
NOTES:
1. MANHOLE TO CONFORM TO ASTM C478 EXCEPT AS MODIFIED BELOW.
2. MANHOLE BASE TO BE REINFORCED WITH A MINIMUM AREA OF 0.20 SQ. IN. PER LINEAR FOOT EACH WAY. WALL REINFORCING TO BE A MINIMUM OF 0.12 SQ. IN. PER LINEAR FOOT. BOTH TONGUE AND GROOVE OF JOINTS SHALL HAVE REINFORCING EQUAL IN AREA TO MINIMUM OF WALL SECTION.
3. ALL JOINTS SHALL CONFORM TO ASTM C443.
4. STEPS TO BE PLASTIC PER COUNTY STANDARDS.
5. ALL PIPE OPENINGS TO BE NO GREATER THAN 3" LARGER THAN O.D. OF PIPE AND ADDITIONALLY REINFORCED WITH A MINIMUM OF 0.20 SQ. IN. OF STEEL AT 90 DEGREES. ADDITIONAL REINFORCING NOT REQUIRED FOR CORED OPENINGS.
6. ALL SURFACES SHALL BE SMOOTH, EVEN TEXTURED WITH A MINIMUM OF HONEYCOMB, FINS, AND OTHER IMPERFECTIONS.
7. LIFTING HOLES SHALL BE PLUGGED WITH EXPANSION GROUT FROM OUTSIDE PRIOR TO BACKFILLING.
8. ALL MASONRY MORTAR SHALL BE PORTLAND CEMENT 1:3 MIX.
9. CARE MUST BE TAKEN TO FORM A SMOOTH FINISHED TROUGH FROM ENTRANCE PIPES TO EXIT PIPE, AND IN CURVED MANHOLES THE TROUGH MUST BE A SMOOTH CIRCULAR ARC TANGENT TO THE INSIDE WALLS OF THE PIPES AT THEIR ENDS.
SLOPE TOP OF CONCRETE BASE 6" TOWARD TROUGH

CONCRETE COLLAR (TYP.)

SECTION A-A
N.T.S.

SECTION OF PRECAST MANHOLE

CONC. COLLAR

SECTION B-B
N.T.S.

NOTES:
1. STRAIGHT WALL OF MANHOLE TO BE LOCATED OVER INFLUENT PIPE

MANHOLE STEP (TYP.) (SEE DETAIL 3.07)

4'-0" OR 5'-0"

JOINT

5" MIN.

PLACED ON UNDISTURBED EARTH OR COMPACTED FILL MATERIAL

ELEVATION VIEW
N.T.S.

CITY OF KINGS MOUNTAIN
WATER RESOURCES
STANDARDS

MANHOLE OVER EXISTING LINE
(DOGHOUSE)

STD. NO  DATE
3.03  1/1/2021

REVISIONS
NO  DATE  DESCRIPTION
NOTES:
1. PIPE FOR INSIDE DROP SHALL BE SDR 35 PVC CONFORMING TO ASTM SPEC. D3034.
2. BOTTOM BEND TO BE 90' SHORT BEND, BELL SPIGOT, OF SDR 35 PVC. SPIGOT OF BEND TO REST DIRECTLY ON EXISTING SHELF. CONSTRUCT MASONRY THROUGH FROM DROP EFFLUENT TO MAIN CHANNEL.
3. NOTCH BELL OF PVC DROP TO ACCEPT D.I.P. SPIGOT AS SHOWN.
4. LOCATE STRAPS AT PIPE BELL AND ABOVE BELL OF 90' BEND AS SHOWN. ADD EXTRA STRAPS AS NECESSARY TO MAINTAIN MAX. SPACING OF TEN FEET.
5. HOLE IN MANHOLE WALL TO MADE WITH A CORING MACHINE. INSTALL FLEXIBLE RUBBER COUPLING.
6. CORE HOLE SHALL NOT ENTER CONE SECTION.
7. STEPS SHALL BE RELOCATED IF THEY CONFLICT WITH INSIDE DROP.
8. INSIDE DROP PIPE TO BE STRAPPED WITH 1/4" x 2" STAINLESS STEEL STRAPS WITH 2 ANCHOR BOLTS. (4' MAXIMUM SPACING BETWEEN STRAPS)
9. MANHOLE DIAMETER MUST BE MINIMUM OF 60".
10. STRAIGHT WALL OF MH TO BE LOCATED OVER INFLUENT PIPE OR OVER WIDEST SHELF.
NOTES:
1. THIS STEP TO BE DRIVEN INTO TAPERED HOLES IN PRECAST MANHOLE SECTIONS. DO NOT USE AS A GROUTED-IN STEP.
2. STEP TO BE CONSTRUCTED OF COPOLYMER POLYPROPYLENE PLASTIC.
3. 1,000 POUND PULL OUT TEST REPORT REQUIRED FOR EACH STEP.
NOTES:
1. MANHOLE RING & COVER TO BE USF 669 RING & KL-1 COVER BY US FOUNDRY.
2. LOAD CLASSIFICATION: HEAVY DUTY
3. MATERIAL: GRAY CAST IRON, ASTM-A48 CLASS 35B
NOTES:
1. YARD HYDRANT TO BE SIMMONS 800 SERIES FREEZE PROOF OR APPROVED EQUAL.
NOTES:
1. WRENCH NUT NOT TO BE MORE THAN 30" BELOW FINISHED GRADE.
2. WHEN OPERATING NUT DEPTH EXCEEDS 4"−0"
   BELOW FINISHED GRADE, PROVIDE EXTENSION STEM
   WITH STD. 2" SQ. OPERATING NUT IN TOP SECTION
   OF VALVE BOX. EXTENSION STEM SHALL BE SIZED
   AS RECOMMENDED BY THE VALVE MANUFACTURER.
SECTION VIEW
N.T.S.

NOTES:
1. TOP OF BOX SHALL BE FLUSH WITH FINISH GRADE
3/8" SS BOLT FOR BOLT-DOWN COVER

GREEN PLASTIC

PRESSURE

SEWER

COVER LIFT (2 PLACES)

PLAN VIEW

N.T.S.

SECTION A-A

N.T.S.

SECTION B-B

N.T.S.

NOTES:
1. METER BOX TO BE BROOKS SERIES 1419, OR APPROVED EQUAL.
NOTES:
1. GRINDER PUMP, BASIN AND ALL OTHER MATERIALS MUST BE APPROVED BY THE CITY BEFORE INSTALLATION.
2. THE GRINDER PUMP MUST BE SECURED TO THE BASE TO PREVENT A FLOAT-AWAY CONDITION.
3. THE 2" PLUG VALVE PROVIDED AT THE TIE POINT WITH EXIST. FORCE MAIN IS TO BE ON THE SAME SIDE OF ROAD AS EXIST. FORCE MAIN.
4. ALL PRIVATE PLUMBING SHALL BE IN ACCORDANCE WITH NORTH CAROLINA BUILDING CODE.
SUGGESTED TRENCH WIDTHS AT TOP OF THE PIPE:

<table>
<thead>
<tr>
<th>NOMINAL PIPE SIZE (IN.)</th>
<th>TRENCH WIDTH (IN.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>32</td>
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<td>10</td>
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<td>38</td>
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<td>40</td>
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<td>42</td>
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<td>44</td>
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<td>30</td>
<td>54</td>
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<td>36</td>
<td>60</td>
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<tr>
<td>42</td>
<td>66</td>
</tr>
<tr>
<td>48</td>
<td>72</td>
</tr>
</tbody>
</table>

2" WIDE MAGNETICALLY DETECTABLE LOCATOR TAPE 12" ABOVE TOP OF PIPE

SECTION VIEW

N.T.S.

NOTES:
1. TRENCH SIDE SLOPES SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS. SUPPORT OR SHORE WHEN TRENCH IS MORE THAN 5' DEEP AND 8' LONG. BEGIN SIDE SLOPE, IF USED, APPROX. 18" ABOVE TOP OF PIPE.
2. BACKFILLING OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PIPE IS LAID. COMPACTION REQUIREMENTS SHALL BE ATTAINED BY THE USE OF MECHANICAL TAMPS ONLY. EACH AND EVERY LAYER OF BACKFILL SHALL BE PLACED LOOSE IN 6" LAYERS AND THOROUGHLY COMPACTED INTO PLACE.
3. UNDER NO CIRCUMSTANCES SHALL WATER BE PERMITTED TO RISE IN UN-BACKFILLED TRENCHES AFTER THE PIPE HAS BEEN PLACED.
4. ALL MATERIAL SHALL HAVE AN IN-PLACE DENSITY OF 100% TO A DEPTH OF 6" BELOW THE FINISHED GRADE OF THE BACKFILL MATERIAL, AND 95% AT GREATER THAN 6" BELOW GRADE.
5. USE PC350 DUCTILE IRON PIPE IF COVER IS LESS THAN 3' OR GREATER THAN 18'.

CLEAN BACKFILL (NO MATERIAL LARGER THAN 2") COMPACTED BACKFILL IN 6" LAYERS.
95% STANDARD PROCTOR

#12 AWG GREEN INSULATED TRACER WIRE

AGGREGATE NO. 67 BEDDING - 1/2" PIPE O.D. BELOW PIPE (UP TO PIPE MIDPOINT).

SLOPE OR SHORING PER O.S.H.A.

UNDISTURBED EARTH OR ROCK

12" MIN.

4" MIN.

TOP 6" - 100% STANDARD PROCTOR
### Suggested Trench Widths at Top of the Pipe:

<table>
<thead>
<tr>
<th>Nominal Pipe Size (In.)</th>
<th>Trench Width (In.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>32</td>
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<td>10</td>
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<td>72</td>
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</tbody>
</table>

#### Section View

- **Top 6" – 100% Standard Proctor**
- **2" Wide Magnetically Detectable Locator Tape 18"-24" Below Grade**
- **Clean Backfill (No Material Larger Than 2") Compacted Backfill in 6" Layers. 95% Standard Proctor**
- **#12 AWG Green Insulated Tracer Wire**
- **3" Min. Cover for Pipes Less Than 16" Dia.**
- **4" Min. Cover for Pipes 16" Dia. and Greater**
- **12" Min.**
- **Undisturbed Earth or Rock**

#### Notes:

1. Trench side slopes shall be in accordance with OSHA requirements. Support or shore when trench is more than 5' deep and 8' long. Begin side slope, if used, approx. 18" above top of pipe.
2. Backfilling of trenches shall be accomplished immediately after pipe is laid. Compaction requirements shall be attained by the use of mechanical tampers only. Each and every layer of backfill shall be placed loose in 6" layers and thoroughly compacted into place.
3. Under no circumstances shall water be permitted to rise in un-backfilled trenches after the pipe has been placed.
4. All material shall have an in-place density of 100% to a depth of 6" below the finished grade of the backfill material, and 95% at greater than 6" below grade.
5. Use PC350 ductile iron pipe if cover is less than 3' or greater than 18'.
SUGGESTED TRENCH WIDTHS AT TOP OF THE PIPE:

<table>
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<th>NOMINAL PIPE SIZE (IN.)</th>
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<td>72</td>
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</tbody>
</table>

2" WIDE MAGNETICALLY DETECTABLE LOCATOR TAPE 18"-24" BELOW GRADE

TOP 6" - 100% STANDARD PROCTOR

CLEAN BACKFILL (NO MATERIAL LARGER THAN 2") COMPACTED BACKFILL IN 6" LAYERS. 95% STANDARD PROCTOR

#12 AWG BLUE INSULATED TRACER WIRE

UNDISTURBED EARTH OR ROCK

SECTION VIEW

N.T.S.

NOTES:
1. TRENCH SIDE SLOPES SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS. SUPPORT OR SHORE WHEN TRENCH IS MORE THAN 5' DEEP AND 8' LONG. BEGIN SIDE SLOPE, IF USED, APPROX. 18" ABOVE TOP OF PIPE.
2. BACKFILLING OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PIPE IS LAID. COMPACTION REQUIREMENTS SHALL BE ATTAINED BY THE USE OF MECHANICAL TAMPS ONLY. EACH AND EVERY LAYER OF BACKFILL SHALL BE PLACED LOOSE IN 6" LAYERS AND THOROUGHLY COMPACTED INTO PLACE.
3. UNDER NO CIRCUMSTANCES SHALL WATER BE PERMITTED TO RISE IN UN-BACKFILLED TRENCHES AFTER THE PIPE HAS BEEN PLACED.
4. ALL MATERIAL SHALL HAVE AN IN-PLACE DENSITY OF 100% TO A DEPTH OF 6" BELOW THE FINISHED GRADE OF THE BACKFILL MATERIAL, AND 95% AT GREATER THAN 6" BELOW GRADE.
5. USE PC350 DUCTILE IRON PIPE IF COVER IS LESS THAN 3' OR GREATER THAN 18'.
TYPE 1
N.T.S.
FLAT-BOTTOM TRENCH WITH LOOSE BACKFILL.

TYPE 2
N.T.S.
FLAT-BOTTOM TRENCH WITH LOOSE BACKFILL LIGHTLY CONSOLIDATED TO CENTERLINE OF PIPE.

TYPE 3
N.T.S.
PIPE BEDDED IN 4-IN. MINIMUM LOOSE SOIL WITH BACKFILL LIGHTLY CONSOLIDATED TO TOP OF PIPE.

TYPE 4
N.T.S.
PIPE BEDDED IN SAND, GRAVEL OR CRUSHED STONE TO DEPTH OF 1/8 PIPE DIAMETER, 4-IN. MINIMUM, WITH BACKFILL COMPACTED TO TOP OF PIPE. (APPROX. 80% STANDARD PROCTOR AASHTO T-99)

TYPE 5
N.T.S.
PIPE BEDDED TO ITS CENTERLINE IN COMPACTED GRANULAR MATERIAL, 4-IN. MINIMUM UNDER PIPE, COMPACTED GRANULAR OR SELECT MATERIAL TO TOP OF PIPE. (APPROX. 90% STANDARD PROCTOR AASHTO T-99)
NOTES:

1. CREEK CROSSINGS MAY REQUIRE A PERMIT FROM STATE AND/OR FEDERAL REGULATORY AGENCIES.

2. COMPACTED EARTH BACKFILL WITHIN EXTENTS OF STREAM CROSSING SHALL EXTEND FROM TOP OF PIPE ENCASEMENT TO TOP OF TRENCH. COMPACT TO 95% MAXIMUM DENSITY PER ASTM D 698.

3. MATCH EXISTING BANK PROFILE EXCEPT WHERE SLOPE OF BANK EXCEEDS 1 TO 1.
NOTES:
1. STEEL H-PILE DESIGN TO BE PROVIDED BY ENGINEER.
2. COUPLING SHALL BE LONG BODY TYPE, AND COMPLETELY EXPOSED.
   COUPLINGS TO BE AS MANUFACTURED BY DRESSER INDUSTRIES - STYLE
   62 TRANSITION COUPLING OR APPROVED EQUAL. CENTER RING LENGTH FOR
   10" TO 15" PIPE TO BE 7". THE CENTER RING, GLANDS, BOLTS AND NUTS
   SHALL RECEIVE ONE COAT OF SHOP PRIMER.
3. MINIMUM DEPTHS SHOWN SHALL BE TO UNDISTURBED SOIL.
4. STEEL PIPE MUST BE SEAMLESS OR STRAIGHT SEAM. SPIRAL WELD IS NOT
   ALLOWED. THE INSIDE DIAMETER OF THE STEEL PIPE TO MATCH THE INSIDE
   DIAMETER OF DUCTILE IRON PIPE. STEEL PIPE TO BE COATED. DUCTILE IRON
   PIPE IS ALLOWED FOR NARROW CREEK CHANNELS SPANNING LESS THAN 18'.
5. MAXIMUM HEIGHT FROM PIPE TO UNDISTURBED SOIL IS 20 FEET.
6. DUCTILE IRON PIPE TO EXTEND TO NEXT MANHOLE. NO PIPE
   TRANSITIONS BETWEEN MANHOLES SHALL BE ALLOWED.
7. CREEK CROSSINGS MAY REQUIRE A PERMIT FROM STATE AND/OR
   FEDERAL REGULATORY AGENCIES.
NOTES:

1. THIS DETAIL APPLIES TO SEWERS RANGING FROM 8" TO 15" IN DIAMETER. FOR SEWERS GREATER THAN 15", SUBMIT A DETAILED DESIGN FOR REVIEW AND APPROVAL.

2. COUPLINGS SHALL BE LONG BODY TYPE, AND COMPLETELY EXPOSED. COUPLINGS TO BE AS MANUFACTURED BY DRESSER INDUSTRIES - STYLE 62 TRANSITION COUPLING OR APPROVED EQUAL. CENTER RING LENGTH FOR 10" TO 15" PIPE TO BE 7". THE CENTER RING, GLANDS, BOLTS AND NUTS SHALL RECEIVE ONE COAT OF SHOP PRIMER.

3. FOOTING DEPTH SHALL BE TO SUITABLE GRADE AS DETERMINED BY THE ENGINEER, BUT SHALL NOT BE LESS THAN AS SHOWN (EXCEPT WHEN PIER IS ANCHORED TO SOLID ROCK).

4. STEEL PIPE MUST BE SEAMLESS OR STRAIGHT SEAM. SPIRAL WELD IS NOT ALLOWED. THE INSIDE DIAMETER OF THE STEEL PIPE TO MATCH THE INSIDE DIAMETER OF DUCTILE IRON PIPE. STEEL PIPE TO BE COATED. DUCTILE IRON PIPE IS ALLOWED FOR NARROW CREEK CHANNELS SPANNING LESS THAN 18".

5. DUCTILE IRON PIPE TO EXTEND TO NEXT MANHOLE. NO PIPE TRANSITIONS BETWEEN MANHOLES SHALL BE ALLOWED.

6. CREEK CROSSINGS MAY REQUIRE A PERMIT FROM STATE AND/OR FEDERAL REGULATORY AGENCIES.

7. THE CREEK UPSTREAM AND DOWNSTREAM OF THE AERIAL CROSSING MAY NEED TO BE STRAIGHTENED FOR PROPER INSTALLATION OF THE PIERS. APPROVAL MAY BE REQUIRED FROM REGULATORY AGENCIES TO STRAIGHTEN CREEK. STABILIZE ALL DISTURBED BANKS WITH RIP-RAP.
NOTES
1. METAL "SPIDERS" SHALL BE USED FOR SUPPORT OF THE CARRIER PIPE WITHIN THE CASING PIPE.
2. A MINIMUM SPACING OF 3 SPIDERS PER JOINT OF CARRIER PIPE SHALL BE REQUIRED.
3. THE SPIDERS SHALL BE SPACED EVENLY ALONG THE CARRIER PIPE SUCH THAT EACH SPIDER SUPPORTS THE SAME UNIT WEIGHT OF THE CARRIER MAN.
4. PLACE SPIDERS REAR TO BELLS AND ALONG MID-SPAN OF PIPE.
5. FOR CASING SIZE SEE CHARTS.
6. STEEL CASING PIPE SHOULD BE GRADE B STEEL WITH A MINIMUM COMPRESSION STRENGTH OF 35,000 PSI IN ACCORDANCE WITH ASTM A139 & A283.
7. CARRIER PIPE IS TO BE D.I.P. RESTRAINED JOINT.
8. GREASE ENCASEMENT AS REQUIRED FOR EASE OF INSTALLATION.
9. HOT DIP GALVANIZE ALL STEEL ASSEMBLY PARTS AFTER FABRICATION.
10. CADMIUM PLATE ALL NUTS & BOLTS.

<table>
<thead>
<tr>
<th>CARRIER PIPE</th>
<th>CASING PIPE</th>
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<tbody>
<tr>
<td>NOMINAL DIAMETER</td>
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</table>
NOTES:
1. WHEN LATERAL SEPARATION IS 10' OR GREATER, NO VERTICAL CLEARANCE IS REQUIRED.

VERTICAL CLEARANCE LESS THAN MINIMUM

CITY OF KING'S MOUNTAIN
WATER RESOURCES
STANDARDS

PIPE SEPARATION REQUIREMENTS
FOR WATER MAINS & SANITARY SEWER MAINS

STD. NO | DATE
-------|------
6.09 | 1/1/2021

REVISIONS
NO | DATE | DESCRIPTION
---|------|----------------
ENCASE PIPING WHERE INDICATED AND UNDER ROADS, STRUCTURES, AND WITHIN LAGOONS, STREAMS OR POND DIKES TO A POINT 12" BEYOND PERMANENT OBJECT ON EACH SIDE OF ENCASEMENT WHERE INDICATED

SECTION "A-A"

TRENCH WIDTH

BACKFILL

6" MIN.

6" MIN.

6" MIN.

6" MIN.

2500 PSI CONCRETE

PLAN

PIPE

PIPE
### Concrete Blocking Chart

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<th>1/4 BENDS</th>
<th>1/8 BENDS</th>
<th>1/16 BENDS</th>
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<th>PLUGS</th>
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**PLAN & ELEVATION – PLUGS**

**PLAN–BENDS**

**PLAN–TEES**

**SECTION X–X**

**NOTES:** CONCRETE BLOCKING AT PLUGS IS TO BE PLACED ONLY WHEN CALLED FOR ON THE PLANS

---

**CITY OF KINGS MOUNTAIN WATER RESOURCES STANDARDS**

**BLOCKING PIPE SIZES 6" - 16"**

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**REVISIONS**

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NOTES

1. ALL PAVEMENT CUTS SHALL BE REPAIRED WITHIN A MAXIMUM OF THREE (3) DAYS FROM THE DATE THE CUT IS MADE. IF CONDITIONS DO NOT PERMIT A PERMANENT REPAIR WITHIN THE GIVEN TIME LIMIT, PERMISSION TO MAKE A TEMPORARY REPAIR MUST BE OBTAINED FROM THE CITY ENGINEER.

2. CONCRETE TRENCH CAP ON ASPHALT STREETS SHALL BE USED ONLY DURING INCLEMENT WEATHER WHEN ASPHALT PLANTS ARE NOT OPERATING.

3. IN ALL OPEN TRENCHES, BACKFILL SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING COMPACTOM REQUIREMENTS BY SOILS TESTING CERTIFIED BY A LICENSED PROFESSIONAL GEOENGINEER.

4. BACKFILL WITH A HIGH CLAY CONTENT, HIGH SHRINK–SWELL POTENTIAL, OR HIGH MOISTURE CONTENT THAT CANNOT MEET COMPACTOM REQUIREMENTS SHALL BE DEEMED UN SUITABLE AND SHALL BE REPLACED WITH SUITABLE BACKFILL MATERIAL.

5. ALL PAVEMENT PATCHES SHALL PROVIDE A UNIFORM AND SMOOTH DRIVING SURFACE.
NOTES

1. ALL PAVEMENT CUTS SHALL BE REPAIRED WITHIN A MAXIMUM OF THREE (3) DAYS FROM THE DATE THE CUT IS MADE. IF CONDITIONS DO NOT PERMIT A PERMANENT REPAIR WITHIN THE GIVEN TIME LIMIT, PERMISSION TO MAKE A TEMPORARY REPAIR MUST BE OBTAINED FROM THE CITY ENGINEER.

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4. BACKFILL WITH A HIGH CLAY CONTENT, HIGH SHRINK–SWELL POTENTIAL, OR HIGH MOISTURE CONTENT THAT CANNOT MEET COMPACTION REQUIREMENTS SHALL BE DEEMED UNSUITABLE AND SHALL BE REPLACED WITH SUITABLE BACKFILL MATERIAL.

5. ALL PAVEMENT PATCHES SHALL PROVIDE A UNIFORM AND SMOOTH DRIVING SURFACE.

6. SURFACE Course AND BASE Course MUST MEET SPECIFIED NCDOT REQUIREMENTS.

7. WHEN ASPHALT IS CUT INSIDE NCDOT ROADWAY CONTRACTOR IS TO MILL AND RESURFACE ENTIRE LANE WIDTH FROM A MINIMUM OF 15' FROM BOTH SIDES OF PAVEMENT CUT.

---

2–3” S9.5B OR S9.5C SURFACE Course

11” B25.0B OR B25.C BASE Course

MILL 3” AND RESURFACE EX PAVEMENT MIN 15’ FROM SAWCUT ON EACH SIDE (NCDOT ROADS ONLY)

SAWED PAVEMENT CUTS

DO NOT DISTURB EXISTING STONE

SHALL BE GRANULAR MATERIAL OR FLOWABLE FILL TO PREVENT SETTLEMENT (UNSUITABLE MATERIAL SHALL BE REPLACED)

VARIES

ASPHALT PAVEMENT

---

CITY OF KINGS MOUNTAIN WATER RESOURCES STANDARDS

OPEN-CUT & REPAIR (NCDOT ROADWAY)

STD. NO  | DATE
6.16    | 1/1/2021

REVISIONS
NO DATE DESCRIPTION
RESTRAINT JOINT TABLE

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NOTES:

THE FOLLOWING CONDITIONS WERE USED TO CALCULATE THE RESTRAINED LENGTHS:
- LAYING CONDITION IS TYPE 3;
- SOIL DESIGNATED AS CLAY;
- DEPTH IS 3 FT;
- DESIGN PRESSURE (TEST) IS 150 PSI;
- SAFETY FACTOR IS 1.5.

FOR THE TEE BRANCH AND REDUCER, LENGTHS ARE BASED ON BRANCHING AND REDUCING FROM THE NEXT LARGER SIZE IN THE TABLE. DEVIATIONS FROM THESE CONDITIONS MUST BE BASED ON THE ABOVE PARAMETERS.
CHAIN LINK FENCING STANDARD DETAIL

3 STANDS 12 GAUGE GALVANIZED BARBED WIRE ON 4" SPACING W/ 4 POINT BARBS

TOP RAIL (TYP.)

POST TOP (TYP.)

1'-1"

10'-0" MAX.

7'-0" TYP.

2" SQ GATE FRAME (TYP. 4 SIDES)

FULCRUM LATCH W/ STRIKE STRAP

DROP BAR

ALL JOINTS WELDED TO MAKE A SOLID FRAME

CHAIN LINK 9 GAUGE FABRIC

TENSION BAR (TYP. 4 SIDES)

4" DIA. GATE POST

2-1/2" GROUND CLEARANCE

3,000 P.S.I. CONC. MIN. DEPTH OF 36"

CITY OF KINGS MOUNTAIN WATER RESOURCES STANDARDS

STD. NO DATE
7.01 1/1/2021

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NO DATE DESCRIPTION