CUT BACKSLOPE AT A 2:1 SLOPE UNLESS CATCH POINT IS OUTSIDE THE PROP. LINE. IF CATCH POINT IS OUTSIDE PROP. LINE, CUT BACKSLOPE TO THE PROP. LINE, TYP. BOTH SIDES OF ROW.

ROW WIDTH 30'

SHOULDER 13'
PAVING 11'

ROW CENTERLINE

F.G. = 0.00' @ Q

F.G. = 0.83' @ Q

F.G. = 0.26' @ Q - 13'

F.G. = 1.13' @ Q - 14.67'

F.G. = 3.24' @ Q - 19'

SEEDING

PROPERTY LINE

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

SLOPE VARIES

PROPERTY LINE

2% SLOPE

2% SLOPE

2" AC PAVING

F.G. - 0% TYP.

-6" TYPE III CLASSIFIED FILL LEVELING COURSE

TYPE II CLASSIFIED FILL COMPACTED TO 95% OF MAXIMUM DENSITY

GEOGRID—SEE NOTE

FILTER FABRIC—SEE NOTE

EXCAVATION LIMITS AS DIRECTED BY ENGINEER

NOTES:
1. PLACE GEOGRID AND FILTER FABRIC A MINIMUM OF 1’ AND A MAXIMUM OF 2’ FROM EACH EDGE OF THE EXCAVATION.
2. TYPICAL CROSS SECTION MAY VARY BASED ON R.O.W. WIDTH, GEOTECHNICAL AND DESIGN INFORMATION.
NOTES:
1. TYP. CROSS SECTION MAY VARY BASED ON ROW WIDTH, GEOTECH & DESIGN INFORMATION.
G — GAS LINE
S — SANITARY SEWER LINE
SD — STORM DRAIN LINE
W — WATER LINE
C — ROADWAY CENTERLINE

NOTES:
1. OFFSETS ARE TO CENTER OF UTILITY.
2. ADDITIONAL RIGHT-OF-WAY MAY BE REQUIRED TO MEET MINIMUM SET-BACKS FOR HYDRANTS.
3. HYDRANT MUST BE SET-BACK A MINIMUM OF 5’ FROM BACK OF CURB OR 1’ FROM EDGE OF SIDEWALK.
4. CURB TO CURB DIMENSIONS SHOWN ARE TYPICAL EXAMPLES ONLY.
2’ MIN. INSIDE ROW OR 5’x10’ HYD. ESMT. IF ON PROPERTY LINE

PROPERTY LINE

2’ MIN.

10’ MIN.

W

S

10’ MIN. SEPARATION

3’ MIN.

15’ MIN.

10’

W

S

KEY BOX SEE STANDARD DETAILS

PROPERTY LINE

5’
1. All material that is to be backfilled within the above-described area will be replaced in one foot lifts & compacted to a minimum of 95%.

2. This backfill will be free of any extensive clays & organic materials.

3. The compaction of this backfill will be accomplished by mechanical means without the aid of water.

4. The ditch line will be reshaped in such a manner as to allow proper drainage & the shoulder of the road will be replaced at a uniform slope not to exceed 2 to 1.
NOTES:
1. TRENCH WALL SLOPE WILL VARY WITH SOIL STRENGTH AND CHARACTER
2. O.D. = OUTSIDE DIAMETER OF PIPE.
3. BEDDING MATERIAL IS CLASS B OR C.
4. BEDDING TO SPRING LINE ONLY FOR DUCTILE IRON PIPE.
NOTES:
(A) TRENCH BACKFILL MATERIAL PLACED AND COMPACTED TO DEPTHS AS DETERMINED BY THE ENGINEER.
(B) TRENCH WALL SLOPES WILL VARY WITH SOIL STRENGTH AND CHARACTER. SLOPES TO CONFORM TO SAFETY STANDARDS.
(C) CLASS "B" OR "C" BEDDING.
(D) BEDDING TO SPRING LINE ONLY WHEN DUCTILE IRON PIPE IS INSTALLED.
NOTE:
Both front and back edges of the curb & gutter shall be troweled to a radius of one-half (1/2) inch.

Curb and Gutter Cross Sections

Detail # 300.01
NOTES:

1. MONOLITHIC SIDEWALK AND CURB & GUTTER MAY BE SUBSTITUTED AS AN ALTERNATE TO THE ROLLED CURB & GUTTER AND SIDEWALK.

2. BOTH FRONT AND BACK EDGES OF THE CURB & GUTTER AND SIDEWALK SHALL BE TROWELED TO A RADIUS OF ONE-HALF (1/2) INCH.
NOTE:
P.C.C. VALLEY GUTTER WILL BE PAID FOR PER LINEAR FOOT UNDER BID ITEM "P.C.C. VALLEY GUTTER". LENGTHS SHALL BE MEASURED ALONG THE STRAIGHT FLOW LINE BETWEEN EXPANSION JOINTS "A&B" AND FROM EXPANSION JOINT "C" TO THE INTERSECTION OF THIS STRAIGHT FLOW LINE (POINT "D") BOTH SIDES.
PROFILE VIEW

EXPANSION JOINT

VARIES

4" P.C.C.

6" P.C.C.

TYPE 1 C&G

TYPE 4 C&G

5' TRANS

1/2 CURB CUT WIDTH

PLAN VIEW

SECTION A-A

<table>
<thead>
<tr>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>-0.025</td>
<td>-0.050</td>
<td>-0.025</td>
</tr>
</tbody>
</table>
SECTION A-A

<table>
<thead>
<tr>
<th>RADIUS*</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>15'</td>
<td>4'</td>
<td>5.5'</td>
<td>5.7'</td>
</tr>
<tr>
<td>20'</td>
<td>4'</td>
<td>6.4'</td>
<td>6.5'</td>
</tr>
<tr>
<td>20'</td>
<td>5'</td>
<td>9.0'</td>
<td>5.5'</td>
</tr>
<tr>
<td>25'</td>
<td>4'</td>
<td>7.1'</td>
<td>7.2'</td>
</tr>
<tr>
<td>25'</td>
<td>5'</td>
<td>10.1'</td>
<td>6.0'</td>
</tr>
<tr>
<td>30'</td>
<td>4'</td>
<td>7.8'</td>
<td>7.9'</td>
</tr>
<tr>
<td>30'</td>
<td>5'</td>
<td>11.0'</td>
<td>6.6'</td>
</tr>
</tbody>
</table>

* RADIUS VARIATES

** CENTERED ON RETURN

TRANSITION BACK OF S.D.W.K.

VARIATES

6' P.C.C.
AFTER DITCH BACKFILL HAS BEEN COMPACTED AN ADDITIONAL 12" WILL BE REMOVED FROM EACH EDGE OF THE ORIGINAL CUT. THE ENGINEER MAY REQUIRE MORE THAN THE 12" ADDITIONAL CUT IF THE EXISTING PAVEMENT HAS BEEN LIFTED IN THE REMOVAL PROCESS OR IF THE JOINT DOES NOT OCCUR ON UNDISTURBED MATERIAL. CUTS MAY BE MADE WITH A SAW OR AIR CHISEL.
NOTES:
1. MIN. STEEL REQ'D FOR BARREL AS PER A.S.T.M. C-478-69 SHALL BE IMBEDDED IN BASE SO THAT FIRST BARREL SECTION IS CONNECTED WITH BASE.
2. RAM-NEK GASKETS ALL BARREL JOINTS.
3. ALL MANHOLE SECTIONS SHALL CONFORM TO A.S.T.M. C-478-69.
4. "JET SET", "ALL CRETE" OR EQUAL AT PIPE CONNECTION WITH PRECAST BASE.
5. NO REBAR TO EXTEND INTO PIPE OPENING.
6. MAXIMUM ALLOWABLE HEIGHT IN GRADE RINGS IS 12" FOR NEW CONSTRUCTION.
7. ALL EXTERIOR JOINTS, INCLUDING GRADE RINGS AND SURFACE CASTINGS, SHALL BE WRAPPED WITH WRAPIDSEAL MANHOLE ENCAPSULATION SYSTEM.
<table>
<thead>
<tr>
<th>LOCATION</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>BACKYARDS, GRAVEL STREETS, AND ALLEY AREAS WHERE TRAVELED.</td>
<td></td>
<td>6&quot;</td>
</tr>
<tr>
<td>UNDEVELOPED AND SWAMPY AREAS.</td>
<td></td>
<td>24&quot; MIN</td>
</tr>
<tr>
<td>R.O.W.S OUTSIDE TRAFFIC AREAS.</td>
<td></td>
<td>6&quot;</td>
</tr>
<tr>
<td>PAVED STREETS.</td>
<td></td>
<td>1/2&quot;</td>
</tr>
</tbody>
</table>
NOTES
1. ALL PERTINENT SECTIONS OF THE STANDARD SPECIFICATIONS WILL APPLY.
2. RESET RING IN FULL BED OF MORTAR.
3. REFER TO ASTM DESIGNATION C-478-69 FOR DESIGN AND STRENGTH REQUIREMENTS.
4. RESET CONE IN RAM-NEK OR EQUAL.
5. ALL EXTERIOR JOINTS, INCLUDING GRADE RINGS AND SURFACE CASTINGS, SHALL BE WRAPPED WITH WRAPIDSEAL MANHOLE ENCAPSULATION SYSTEM.
NOTE:
STEP INSTALLATION FOR MANHOLES AND CATCH BASINS. THIS TYPE STEP IS REQUIRED WHEN CONCRETE HAS SET.

MORTAR WATERPROOF COATING REQ'D

3/4" DIA. (HOT DIP GALVANIZING)

MORTAR

SANITARY SEWER MANHOLE STEP

500.05
NOTE:
CAST IRON STEPS MUST BE INSTALLED
DURING MANHOLE SECTION POUR OR
BEFORE CONCRETE SETS.
NEENAH CASTING No. R-1981-N OR EQUAL.
SUPPLY WITH HANDHOLD LIFTING STRAP

SUPPLY WITH GAS/VACUUM RELIEF VALVE

TYPICAL LOOKING INSERT

SECTION A–A

24 3/8" O.D.

2 1/2" TO 4"

22 1/2" DIA.

COMPRESSIBLE GASKET. ATTACHED TO INSERT FACE AS SHOWN WITH AN ADHESIVE

NOTES:

1. INSERT MATERIAL: ABS OR PE
AVAILABLE FROM: FRW INDUSTRIES, INC.
14882 ROSEBUD, CONROE, TX 77303
NOTE: ALL MANHOLE LIDS PLACED WITHIN A ROADWAY SECTION SHALL BE RATED FOR HEAVY VEHICLE TRAFFIC.
NOTES:
1. ALL PERTINENT SECTIONS OF THE STANDARD SPEC. WILL APPLY.
2. REFER TO ASTM DESIGNATION C-478-69 FOR DESIGN AND STRENGTH REQUIREMENTS.
3. WHEN AN ADJUSTMENT OF GREATER THAN 18" IN GRADE RINGS IS REQUIRED, A CONE ADJUSTMENT SHALL BE MADE.
4. ALL EXTERIOR JOINTS, INCLUDING GRADE RINGS AND SURFACE CASTINGS, SHALL BE WRAPPED WITH WRAPIDSEAL MANHOLE ENCAPSULATION SYSTEM.
**SANITARY SEWER DROP CONNECTION**

**TYPE A + B MANHOLE**

---

**DROP MANHOLE**

<table>
<thead>
<tr>
<th>SEWER DIA. D1</th>
<th>DROP DIA. D2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>10&quot;</td>
<td>10&quot;</td>
</tr>
<tr>
<td>12&quot;</td>
<td>12&quot;</td>
</tr>
<tr>
<td>15&quot;</td>
<td>12&quot;</td>
</tr>
<tr>
<td>18&quot;</td>
<td>15&quot;</td>
</tr>
<tr>
<td>21&quot;</td>
<td>15&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
<td>18&quot;</td>
</tr>
<tr>
<td>30&quot;</td>
<td>21&quot;</td>
</tr>
<tr>
<td>36&quot;</td>
<td>24&quot;</td>
</tr>
</tbody>
</table>

- **MANHOLE TYPE "A" OR "B"**
- **MECH. JOINT**
- **MORTAR**
- **DUCTILE IRON 10' MIN.**
- **90° TEE**
- **COMPACTED BACKFILL 95% MAX. DENSITY.**
- **DROP PIPE TO BE SAME SIZE AS THE INTERCEPTED SEWER.**
- **MECHANICAL JOINT**
- **90° BEND**
- **POUR CONCRETE TO COMPACTED FILL OR ORIGINAL GROUND.**
- **EXPANDING MORTAR**

**INSTALL PLUG**

**MATCH CROWNS**

**28" MIN. FOR 12" 26" MIN. FOR 10" 24" MIN. FOR 8" (28"-32" SHORT BODY FITTING REQUIRED)
WHEN INSTALLING A BEAVER SLIDE THAT INTERCEPTS AN EXISTING SEWER AT A RIGHT ANGLE, THE CONNECTING INVERT OF THE BEAVER SLIDE IS TO INTERCEPT THE EXISTING SEWER SLIGHTLY ABOVE THE SPRINGLINE AS SHOWN. DISTANCE MEASURED FROM INVERT TO INVERT.

WHEN INSTALLING A BEAVER SLIDE WHERE THE FLOW IS STRAIGHT THROUGH THE MANHOLE, THE BEAVER SLIDE IS TO MATCH THE INVERT OF THE EXISTING LINE AND NOT TO EXTEND MORE THAN HALF-WAY THROUGH THE MANHOLE. DISTANCE MEASURED FROM INVERT TO INVERT.
NOTE: BRING 2"x4" WOOD POST 3' ABOVE FINISH SURFACE GRADE.

FINISH SURFACE GRADE

MINIMUM 1/2" X 2' REBAR DRIVEN FLUSH TO FINISH GRADE ALONG SIDE OF 2" X 4" WOOD POST

SLOPE = 1-3%
22 1/2' OR 45' SWEEP

EDGE OF R.O.W. OR PERMANENT SEWER OR UTILITY EASEMENT

NOTE:

1.) SERVICE CONNECT 4" DIAMETER.
2.) USE DOUBLE OR SINGLE STRAP CAST IRON SADDLES
3.) USE "TYTON" OR "TY-SEAL" OR IF NO HUB, USE "ROMAC REPAIR CLAMP" STYLE "LSS1" X 6" LONG OR EQUAL.
4.) BRING 2" X 4" WOOD POST FROM FACE OF STUBOUT TO 3' ABOVE FINISH GRADE AND MARKED "SEWER" IN 2" LETTERS

SCALE:

SANITARY SEWER SERVICE CONNECTION

DETAIL #

500.13
NOTE:
DUCTILE IRON MECHANICAL CONNECTIONS MAY BE USED AT CONTRACTOR'S OPTION.

PLUG 4" OR 6"

SERVICE CONNECTION

LIMIT OF PAYMENT AT FIRST WYE CONNECTION

SERVICE RISER 4" OR 6" TY-SEAL AS DIRECTED

USE IFCD 1068 OR EQUAL

NOTE: USE TOP ENTRY TAP IF SEWER MAIN IS 10' DEEP OR GREATER.
SEE SANITARY CLEANOUT COVER DRAWING

8" DUCTILE IRON PIPE CLASS 50.

CONCRETE TO ENCASE PIPE 4" MIN.

24"

8" D.I.P. 45° BEND

36"

VARIABLE

UNDISTURBED GROUND OR BACKFILL TO BE COMPACTED TO 95% MAX. DENSITY

NOTE: WHEN D.I. PIPE WITH MECHANICAL JOINT IS USED CONCRETE ENCASEMENT IS NOT NECESSARY

SANITARY SEWER CLEANOUT

SCALE:

500.15

DETAIL #

NOTE:

REVISIONS:

6/99
NOTE:

1. TO BE CAST.
2. CASTING THICKNESS SUBJECT TO FOUNDRY REQUIREMENTS.
3. CASTING MUST BE SIZED TO 8" AND OVER, CLASS 22 C.I.
   OR CLASS 50 D.I. PIPE.
4. COVER SHALL BE 1/4" BELOW TOP OF PAVEMENT & 6" BELOW GROUND.

1/2" SET SCREW
3 REQUIRED @120°

1/2" SET SCREW
12 1/2"
<table>
<thead>
<tr>
<th>SIZE</th>
<th>PRESSURE RATING PSI (SET-SCREWS PROVIDE RESTRAINT)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>SET-SCREWS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>250</td>
<td>4.80</td>
<td>51/8</td>
<td>25/16</td>
<td>1</td>
<td>7/8</td>
</tr>
<tr>
<td>6</td>
<td>250</td>
<td>6.90</td>
<td>51/4</td>
<td>23/8</td>
<td>1</td>
<td>11/4</td>
</tr>
<tr>
<td>8</td>
<td>250</td>
<td>9.05</td>
<td>55/8</td>
<td>25/8</td>
<td>11/16</td>
<td>11/4</td>
</tr>
<tr>
<td>10</td>
<td>250</td>
<td>11.10</td>
<td>53/4</td>
<td>29/16</td>
<td>11/8</td>
<td>11/4</td>
</tr>
<tr>
<td>12</td>
<td>250</td>
<td>13.20</td>
<td>53/16</td>
<td>29/16</td>
<td>13/16</td>
<td>11/4</td>
</tr>
<tr>
<td>14</td>
<td>250</td>
<td>15.30</td>
<td>7</td>
<td>35/8</td>
<td>11/4</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>250</td>
<td>17.40</td>
<td>71/16</td>
<td>35/8</td>
<td>15/16</td>
<td>2</td>
</tr>
<tr>
<td>18</td>
<td>250</td>
<td>19.50</td>
<td>71/8</td>
<td>35/8</td>
<td>13/8</td>
<td>2</td>
</tr>
</tbody>
</table>

MJ CAP WITH MEGALUG SERIES 1100 MECHANICAL JOINT RESTRAINT

PIPE
UNDISTURBED SOIL

RESTRRAIN JOINT WITH FIELD LOCK GASKET.

2" X 4" WOOD POST EXTENDING FROM FACE OF CAP TO 3' ABOVE FINISH GRADE PAINTED WHITE AND STENCILED WITH 2" BLACK LETTERS "WATER", DRIVE A MINIMUM 1/2" X 2' STICK OF REBAR ALONGSIDE OF POST FLUSH TO THE GROUND

NOTES:
1. ALL MECHANICAL JOINT (MJ) FITTINGS, INCLUDING VALVES AND END CAPS, SHALL BE RESTRAINED WITH MEGALUG SERIES 1100, MECHANICAL JOINT RESTRAINTS OR APPROVED EQUAL.
2. ALL MECHANICAL JOINT RESTRAINTS SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS.
EXISTING GRADE (UNPAVED)

EXTENSION TO BE SAWS
OFF 6" MIN. & 12" MAX.

DUST PAN
TOP SECTION

EXTENSION ROD
LENGTH VARIES

EXTENSION RISER
LENGTH VARIES

BASE SECTION

90°

WRAP BURLAP INSIDE BOTTOM SECTION UNDER PACKING GLAND

NOTES:

1. LID AND TOP SECTION TO BE OLYMPIC FOUNDRY TYPE C OR EQUAL.
2. BASE SECTION TO BE OLYMPIC TYPE B OR EQUAL.

OPERATING NUT & VALVE BOX

WATER

3"

1/4"

36" MAX.

FINISHED PAVEMENT

TYPICAL VALVE BOX
HYDRANT INSTALLATION NOTES:
1. HYDRANT BARREL MUST BE INSTALLED PLUMB AND THE LEG MUST BE INSTALLED LEVEL.
2. DRAIN PLUG TO BE INSTALLED BY CONTRACTOR.
3. ALL HYDRANTS SHALL BE PAINTED WITH SHERWIN/WILLIAMS YELLOW (FEDERAL SPECIFICATION #13538).
4. AUXILIARY GATE VALVE BOX TO BE INSTALLED ACCORDING TO DETAIL FOR TYPICAL VALVE BOX.
5. USE MEGALUG RESTRAINTS ON ALL MECHANICAL JOINTS
4" HEAVY WALL STEEL PIPE FILLED WITH CONCRETE, PAINTED WITH SHERWIN WILLIAMS YELLOW (FEDERAL SPECIFICATION #13538) AFTER INSTALLATION

NOTES:
1. GUARD POSTS WILL BE FURNISHED & INSTALLED BY THE CONTRACTOR.
2. POSTS SHALL BE LOCATED TO ALLOW UNRESTRICTED ACCESS TO PUMPER AND HOSE CONNECTIONS.
NOTES:

1. MATCH CULVERT INVERTS TO BOTTOM DITCHLINE GRADE OR DESIGN ELEVATIONS AS SHOWN ON PLANS.

2. CULVERT BEDDING MATERIAL SHALL BE TWO INCH MAXIMUM SIZE SAND OR SANDY GRAVEL FOR A MINIMUM DISTANCE OF SIX INCHES AROUND CULVERT.

3. THREE INCH MAXIMUM GRANULAR GRAVEL FILL MATERIAL IS REQUIRED FOR TOP TWO FEET OF THE DRIVEWAY.

4. TOP COURSE MATERIAL SHALL MATCH THE EXISTING GRAVEL ROAD SURFACE BUT IN NO CASE SHALL EXCEED TWO INCHES IN SIZE.

5. DRIVEWAY SHALL BE CONSTRUCTED ON A MINUS 3% GRADE FROM THE SHOULDER OF THE ROAD TO THE PROPERTY LINE OR AS DIRECTED BY THE ENGR.

6. DRIVEWAYS CONSTRUCTED ONTO PAVED ROADS MUST BE PAVED WITH TWO INCHES AC FROM PAVED ROAD SURFACE TO THE FIRE HYDRANT OR AS DIRECTED BY THE ENGR.

7. CULVERT MATERIAL SHALL BE TYPE (CMP) CORRUGATED METAL PIPE GALVANIZED STEEL ONLY, CONFORMING TO ASHTO M-36 OR M-218 AND ASTM-A-444. CORRUGATIONS MAY BE EITHER ANNULAR OR HELICAL. CULVERT END SECTIONS SHALL BE GALVANIZED STEEL.
NOTES:
1. USE MUELLER CORPORATION STOP NO. 15025 FOR PIPE-THREAD SADDLES.
2. USE MUELLER CORPORATION STOP NO. 15000 FOR STEEL PIPE.
3. USE MUELLER CURB STOP NO H-15214 FOR COPPER TO COPPER CONNECTIONS.
4. ROD TO BE ATTACHED TO CURB STOP WITH NO. 6 GUAGE COPPER WIRE, NO SUBSTITUTIONS.
5. MUELLER SERVICE CLAMP TO BE USED ON ALL PLASTIC PIPE, DOUBLE STRAP OR EQUAL.
6. HDPE MAINLINES SHALL UTILIZE A SIDEWALL BRANCH SADDLE WITH INTEGRAL BRASS CC THREAD INSERT TO RECEIVE CORPORATION STOP.
7. CURB BOX FINISH ELEVATION SHALL BE AS FOLLOWS:
   - PAVED AREA .5" BELOW FINISH GRADE
   - GRAVEL AREA 1"-3" BELOW FINISH GRADE
   - YARD/UNDEVELOPED AREA 0" TO 3" ABOVE FINISH GRADE
NOTES
1. USE MUELLER CORPORATION STOP NO. 15025 OR EQUAL.
2. MUELLER SERVICE CLAMP WITH (2) TWO STRAPS OR EQUAL SHALL BE USED ON ALL PIPE.
3. ROD TO BE ATTACHED TO CURB STOP WITH NO. 6 GAUGE COPPER WIRE—NO SUBSTITUTIONS.
4. USE MUELLER CURB STOP NO. H15214 ORISEAL.
5. HDPE MAINLINES SHALL UTILIZE A SIDEWALL BRANCH SADDLE WITH INTEGRAL BRASS CC THREAD INSERT TO RECEIVE CORPORATION STOP.
6. CURB BOX FINISH ELEVATION SHALL BE AS FOLLOWS:
   - PAVED AREA .5” BELOW FINISH GRADE
   - GRAVEL AREA 1”–3” BELOW FINISH GRADE
   - YARD/UNDEVELOPED AREA 0”–3” BELOW FINISH GRADE
DOUBLE WATER SERVICE

PLAN

Curb Stop and Box

Property Line

Lot A

Lot B

5’ Min. (Typ)

Two Individual Lines

SINGLE TRENCH

12” Min.

Corporation Stop

Main

Property Line

2’ Min.
2" OPERATING NUT
2" X 2" X 1/8" SQ TUBE

CENTER RING
3/16" PLT X 4 1/2" OD

1" STD PIPE

LENGTH VARIES

OP SOCKET
2 1/2" X 2 1/2" X 3/16" TUBE
3/8" X 1" SET SCREW

2" X 2" X 1/4" PLT

NOTES:

1. ALL 3/16" PAINTED ASPHALT TAR BLACK.

2. ROODS SHALL BE AS MANUFACTURED BY WESTEEL CO. STEEL FABRICATORS,
   8001 7TH AVE. SOUTH, SEATTLE, WA 98108, (206) 767-4224
A = DEPTH FOR PAYMENT UNDER "TRENCH EXCAVATION AND BACKFILL" WHERE INSULATION IS PLACED OVER EXISTING PIPE

NOTES:
1. THIS DETAIL APPLIES ONLY WHERE INSULATION IS REQUIRED BY THE PLANS.
2. MAXIMUM I.D. = 12"

** AS NOTED ON PLANS

<table>
<thead>
<tr>
<th>B*</th>
<th>NEW MAIN</th>
<th>EXISTING MAIN</th>
<th>NEW SERVICE CON.</th>
<th>EXISTING SERVICE CON.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1'</td>
<td>2'</td>
<td>1'</td>
<td>2'</td>
<td>2'</td>
</tr>
<tr>
<td>1' to 3'</td>
<td></td>
<td>2'</td>
<td>1'</td>
<td>2'</td>
</tr>
<tr>
<td>3' to 5'</td>
<td></td>
<td>3'</td>
<td>3'</td>
<td>3'</td>
</tr>
<tr>
<td>5' to 7'</td>
<td></td>
<td>4'</td>
<td>4'</td>
<td>4'</td>
</tr>
</tbody>
</table>
NOTE: ALL JOINTS TO BE TIED TOGETHER WITH 3/4" THREADED ROD. TIE RODS TO BE SUPPORTED EACH 27' TO INSURE A SYMMETRICAL LOCATION.

EVERY EFFORT SHOULD BE MADE TO RELOCATE WATER MAIN LINE UNDER THE SEWER MAIN LINE.
NOTES:

1. ALL JOINTS TO BE TIED TOGETHER WITH 3/4" THREADED ROD OR EQUAL.
2. RELOCATED WTER LINE SHALL BE NO LESS THAN 18" DISTANCE FROM STORM SEWER LINE.
3. INSULATION SHALL BE POSITIONED NO LESS THAN (4) FOUR INCHES FROM STORM SEWER.
4. MINIMUM VERTICAL SEPARATION IS (18") EIGHTEEN INCHES UNLESS INSULATED WITH (4) FOUR INCHES OF RIGID BOARD INSULATION IN CONFORMANCE WITH SECTION 70.18 INSULATION. (2" STOCK WITH OVERLAPPING JOINTS)
DUCTILE IRON SEWER PIPE ALTERNATE IN LIEU OF CONCRETE SEWER ENCASEMENT

12" TYLER DUCTILE IRON MJ REPAIR SLEEVE OR EQUAL

WATER LINE OVER SEWER

TRANSITION GASKET OR COUPLING

C.I.P. OR D.I.P.

DUCTILE IRON SEWER PIPE

18" MIN.

WATER LINE UNDER SEWER

9'-0" MIN.

9'-0" MIN.

700.05
NOTES:

1. SLEEVE/CASING PIPE SHALL BE EITHER WELDED OR STAINLESS STEEL CASING PIPE SCHEDULE 40 WALL OR CORRUGATED METAL PIPE (CMP) GAUGE 0.064 INCHES MINIMUM WALL (PIPE SIZE SHALL BE PER TABLE).

2. IN NO CASE SHALL THE NUMBER OF SLATS AROUND THE PIPE BE LESS THAN THREE AND THE THICKNESS OF THE SLATS SHALL BE AS APPROVED BY THE ENGINEER.

3. SLATS SHALL BE PLACED BETWEEN EACH PIPE JOINT, AND NEVER OVER THE JOINT, OR AS DIRECTED BY THE ENGINEER. THICKNESS OF THE SLATS SHALL BE GREAT ENOUGH SO THAT THE PIPE RESTS ON THE WOOD AND NOT ON THE JOINTS (i.e. BELL FLANGES, ETC.).

4. METAL BANDS SHALL BE AS APPROVED BY THE ENGINEER.

5. THE SLAT MATERIAL SHALL BE EITHER REDWOOD OR WESTERN CEDAR.

<table>
<thead>
<tr>
<th>UTILITY PIPE</th>
<th>SLEEVE/CASING PIPE SIZE (INCHES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&quot;</td>
<td>2&quot; WOOD SLATS OPTIONAL</td>
</tr>
<tr>
<td>2X1”</td>
<td>4&quot; FOR K–COPPER WATER</td>
</tr>
<tr>
<td>4”</td>
<td>8&quot; SERVICE LINES</td>
</tr>
<tr>
<td>6”</td>
<td>12”</td>
</tr>
<tr>
<td>8”</td>
<td>15”</td>
</tr>
<tr>
<td>10”</td>
<td>20”</td>
</tr>
<tr>
<td>12”</td>
<td>24”</td>
</tr>
</tbody>
</table>
SIGN PLACEMENT
CURB WITHOUT SIDEWALK

SIGN 1
SECONDARY SIGN IF NEEDED

SIGN 2

2'-0" MIN.

6'-0" MIN.

7'-0"

FACE OF CURB
NOTES:
1. 12" THRU 36" PIPE ENDS RE-CORRUGATED TO ANNULAR 2 VALLEYS MIN. PER END.
2. 48" THRU 120" PIPE ENDS RE-CORRUGATED TO ANNULAR 4 VALLEYS MIN. PER END.
3. BAND ANGLES TO BE 2"x2"x12" GA. MIN.
4. BAND MATERIAL AND FABRICATION PER AASHTO M36 AND AASHTO M218 12" THRU 120" BANDS TO BE 16 GAUGE.
5. DIMPLED TYPE CONNECTING BANDS ALLOWED ONLY WHERE FITTINGS ARE USED IN NEW OR EXISTING CONSTRUCTION, FOR REPAIRS TO DAMAGED CMP AND FOR EXTENSIONS TO CMP WITHOUT ANNULAR ENDS. BANDS TO BE SIZED PER ABOVE SCHEDULE. (MIN. 12")
6. BOLT SIZE SHOULD BE 1/2" DIAMETER BY 8" LONG. NUTS SHALL BE PROVIDED WITH A WASHER.
NOTES:

1. REFER TO A.S.T.M. DESIGNATION C-470-69 FOR DESIGN REQUIREMENTS.

2. SEE MANHOLE FRAME & COVER DETAIL

3. MIN. STEEL REQ'D FOR BARREL AS PER A.S.T.M. C-478-69 SHALL BE IMBEDDED IN BASE SO THAT FIRST BARREL SECTION IS CONNECTED WITH BASE.

4. PRIMARY LEADS NOT TO EXCEED 30" CMP, PCMP, CPEP OR 27" RCP WITH INCLUDED ANGLE BETWEEN LEADS NO LESS THAN 135° OR PRIMARY LEAD NOT TO EXCEED 24" CMP, PCMP, CPEP OR 21" RCP WITH INCLUDED ANGLE LESS THAN 135°.

5. BLOCKOUTS TO BE FORMED.

6. RUNGS TO BE PLACED 12" ON CENTER ON UNOBSERVED SIDE OF MANHOLE 18" MAX. FROM BOTTOM OF MANHOLE & 6" MAX. FROM TOP OF CONE. IF UNOBSERVED SIDE NOT AVAILABLE, BOTTOM RUNG TO BE PLACED 6" OVER SMALLEST PIPE. SEE RUNG (MANHOLE STEP) DETAIL

NO. 4 REBAR AT 12" INTERVALS BOTH WAYS IN 6"X 60" ROUND BASE.
NOTES:
1. REFER TO A.S.T.M. DESIGNATION C-478-69 FOR DESIGN REQUIREMENTS.
2. ALL PIPE TO EXTEND TWO INCHES (2") INTO MANHOLE.
3. BLOCKOUTS TO BE FORMED.
4. PRIMARY LEADS NOT TO EXCEED TWO 42" CMP, PCMP, CPEP OR 36" RCP WITH INCLUDED ANGLE BETWEEN LEADS NOT LESS THAN 135' OR PRIMARY LEADS NOT TO EXCEED TWO 36" CMP, PCMP, CPEP OR RCP WITH INCLUDED ANGLE BETWEEN LEADS LESS THAN 135'.

KEY AS SHOWN IF NOT POURED MONOLITHIC
NOTES
1. ALL PERTINENT SECTIONS OF THE STANDARD SPECIFICATIONS WILL APPLY.
2. RESET RING IN FULL BED OF MORTAR.
3. REFER TO ASTM DESIGNATION C-478-69 FOR DESIGN AND STRENGTH REQUIREMENTS.
4. RESET CONE IN RAM-NEK OR EQUAL.
NOTES:
1. ALL PERTINENT SECTIONS OF THE STANDARD SPEC. WILL APPLY.
2. REFER TO ASTM DESIGNATION C-478-69 FOR DESIGN AND STRENGTH REQUIREMENTS.
3. WHEN AN ADJUSTMENT OF GREATER THAN 18” IN GRADE RINGS IS REQUIRED, A CONE ADJUSTMENT SHALL BE MADE.
NOTE:
STEP INSTALLATION FOR MANHOLES AND CATCH BASINS. THIS TYPE STEP IS REQUIRED WHEN CONCRETE HAS SET.

MORTAR
WATERPROOF COATING REQ'D

3/4" DIA. (HOT DIP GALVANIZING)

MORTAR

STORM DRAIN
MANHOLE STEP

SCALE: NTS
REVISED: 6/99
DETAILED #
NOTES:
CAST IRON STEPS MUST BE INSTALLED
DURING MANHOLE SECTION POUR OR
BEFORE CONCRETE SETS.
NEENAH CASTING No. R-1981-N OR EQUAL.
NOTE: ALL MANHOLE LIDS PLACED WITHIN A ROADWAY SECTION SHALL BE RATED FOR HEAVY VEHICLE TRAFFIC.
<table>
<thead>
<tr>
<th>LOCATION</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>BACKYARDS, GRAVEL STREETS, AND ALLEY AREAS WHERE TRAVELED.</td>
<td></td>
<td>6&quot;</td>
</tr>
<tr>
<td>UNDEVELOPED AND SWAMPY AREAS.</td>
<td></td>
<td>24&quot; MIN</td>
</tr>
<tr>
<td>R.O.W.'S OUTSIDE TRAFFIC AREAS.</td>
<td></td>
<td>6&quot;</td>
</tr>
<tr>
<td>PAVED STREETS.</td>
<td></td>
<td>1/2&quot;</td>
</tr>
</tbody>
</table>
NEENAH No. R-3065 CURB INLET
FRAME & CURB BOX WITH TYPE DR,
L, OR V GRATE (SEE DETAIL FOR
CATCH BASIN INLET FOR TYPE I C & G)
OR APPROVED EQUAL.

OFFSET REFERENCE POINT AT BACK
OF CURB
MATCH BACK OF CURB

2-6" HIGH PRECAST CONC. RING
SHALL MEET A.S.T.M. C-478-64T

MIN. STEEL REQ'D=
0.12 SQ. IN PER
LINEAL FOOT

2" COVER

10" PIPE AT 4.0%
MIN. GRADE OR AS
DIRECTED BY THE
ENGINEER

4" MIN. 4" MIN.
48" I.D.

18" MIN.
No. 4 DIA.
LIFT RING

4'-1"

SIDE VIEW

#4 REBAR AT 12" INTERVALS
BOTH WAYS

5'-0"

EXPANSION
JOINTS

2-6" HIGH
PRE-CAST
CONC. RINGS

5'-9"

FRONT VIEW

5'-0"

6" TYP.

#4Ø
IN SLAB

#3Ø

2' TYP.

REDCUCING SLAB

NOTES:
1. COMPRESSIVE STRENGTH OF CONC. SHALL
BE MINIMUM 4000 P.S.I. EXCEPT BASE
SLAB WHICH MAY BE 3000 P.S.I.
BASE & BARREL SHALL BE CONNECTED BY
CONTINUOUS STEEL.
2. SEE ASTM C-478-64T FOR DESIGN REQUIREMENTS.
3. AT CATCH BASIN, DELETE CONC. CURB & GUTTER, PAVE
TO FACE OF CATCH BASIN INLET.

STORM DRAIN
PRECAST CATCH BASIN
FOR TYPE 1 CURB + GUTTER

SCALE:
NTS
REVISED:
6/99
DETAIL #
800.11
Curb Box Adjustable 4" to 9"

Curb Inlet Frame, Grate and Curb Box

Illustrating Neenah R-3065 with Type DR Reversible Grate. For opposite hand flip grate top to bottom.

Alternate Type L Grate

Alternate Type V Grate

Storm Drain Catch Basin Inlet for Type 1 Curb + Gutter