1. Standard Sanitary Sewer Details (SAN- Prefix)
   SAN - 01 PVC PIPE BEDDING DETAIL
   SAN - 02 POLYPROPYLENE (FLEXIBLE) PIPE INSTALLATION METHODS
   SAN - 03 POLYPROPYLENE (FLEXIBLE) PIPE INSTALLATION METHODS
   SAN - 04 POLYPROPYLENE (FLEXIBLE) PIPE INSTALLATION METHODS
   SAN - 05 CONC PVMT REPAIR
   SAN - 06 EXISTING MANHOLE TAP
   SAN - 07 MANHOLE ABANDONMENT
   SAN - 08 MH PLUG
   SAN - 09 PRECAST MH DETAIL
   SAN - 10 STANDARD SAN SEWER MH RING & COVER
   SAN - 12 MH COVER REMOVAL & REPLACEMENT #1
   SAN - 13 MH COVER REMOVAL & REPLACEMENT #2
   SAN - 14 OUTSIDE DROP MH CONNECTION
   SAN - 15 SEWER SERVICE CONNECTION
   SAN - 16 TRACER WIRE FOR SERVICE LINES
   SAN - 17 PROTECTIVE ENCLOSURE FOR CLEAN OUTS
   SAN - 18 PROTECTIVE ENCLOSURE FOR CLEAN OUTS
   SAN - 19 PRESSURE MH DETAIL
   SAN - 20 THRUST BLOCK DETAIL
   SAN - 21 SANITARY SEWER LAMPHOLE
   SAN - 22 HIGHWAY OR RR SEWER XING DETAIL
   SAN - 23 CONCRETE COLLAR
   SAN - 24 SEWER PIPE CONC ENCASEMENT
   SAN - 25 COMM/RESIDENTIAL SS PERMITS

2. Standard Storm Sewer Details (STM - Prefix)
   STM - 01 EXIST INLET OR RCB CONNECTION
   STM - 02 TYPE 'A' CATCH BASIN
   STM - 03 TYPE 'C' CURB INLET
   STM - 04 TYPE 'D' CATCH BASIN
   STM - 05 CONC JUNCTION BOX W/ MH RING & COVER
   STM - 06 STANDARD STORM SEWER RING & COVER
   STM - 07 CONC DITCH W/ INVERT
   STM - 08 ROCK/MESH SEDIMENT CONTROL FENCE

3. Standard Street Details (ST- Prefix)
   ST - 01 TYPICAL SECTIONS ARTERIAL STREETS
   ST - 02 TYPICAL SECTIONS 2 & 3 LANE STREETS
   ST - 03 TYPICAL SECTION RESIDENTIAL ALLEY
   ST - 04 STD UPRIGHT CURB & GUTTER
ST - 05 TYPE "A" & TYPE "S" CURB
ST - 06 CONC GUTTER XING
ST - 07 CONCRETE FLUME
ST - 08 TYPE A DRIVEWAY WITH NO SIDEWALK
ST - 09 TYPE B DRIVEWAY WITH SIDEWALK AGAINST CURB
ST - 10 TYPE C DRIVEWAY WITH SIDEWALK OFFSET FROM CURB
ST - 11 CONC SIDEWALK DETAILS
ST - 12 HANDRAIL DETAIL
ST - 13 Poured Concrete Sidewalk Wall
ST - 14 TYPE "A" ADA RAMP
ST - 15 TYPE 'B' ADA RAMP
ST - 16 TYPE 'C' ADA RAMP
ST - 17 TYPE 'D' ADA RAMP
ST - 18 SIGN SUPPORT & INSTALLATION DETAILS
ST - 19 SIGN SUPPORT & INSTALLATION DETAILS
CONC PVMT REPAIR & CRUSHED STN BKFILL WHEN UNDER STREET OR DRIVES. EXTEND TO 4' EACH SIDE OF CURB OR PVMT WHEN XING STREET.

CONTRACTOR SHALL FOLLOW OSHA REQUIREMENTS FOR SHORING & CONFINED SPACE ENTRY.

FINISHED TRENCH IN DIRT SHALL BE BACKFILLED WITH 6" BLACK DIRT & SEEDED, MULCHED, & FERTILIZED.

DENSELY COMPACTED GRANULAR BEDDING & BACKFILL AS PER CITY OF JOPLIN SPECS

USE 6" BEDDING THICKNESS UNDER PIPE IF IN SOLID ROCK

NOTE:
FOR SANITARY SEWER LATERAL PIPES USE 3/4" CLEAN ROCK OR APPROVED EQUIVALENT REQUIRED UNDER THE FULL LENGTH OF THE INSTALLED PIPE.
TRENCH INSTALLATION

LEGEND

D₁ = INSIDE DIAMETER OF PIPE.
D₀ = OUTSIDE DIAMETER OF PIPE.
(I) = (D₀/4) + 6" (MIN.)

NOTE:
MULTIPLE PIPE SHALL BE INSTALLED WITH A
MINIMUM CLEARANCE BETWEEN PIPES OF 3/4 D₀
OR 12", WHICHEVER IS GREATER, BUT NOT TO
EXCEED 36".

EMBANKMENT INSTALLATION

6" MIN. FOUNDATION REQUIRED
WHEN ROCK, UNYIELDING, SOFT,
OR OTHERWISE UNSUITABLE
MATERIAL IS ENCOUNTERED.
NOTE:
ON YIELDING SOIL, PIPE CULVERTS SHALL BE PLACED ON A CAMBERED FLOW LINE. THE AMOUNT OF CAMBER WILL VARY WITH SOIL CONDITION AND WILL BE SPECIFIED ON THE DESIGN PLANS.

TYPICAL CAMBERED FLOW LINE

CONSTRUCTION SEQUENCE:
1. PLACE BEDDING MATERIAL TO GRADE.
2. COMPACT BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
3. INSTALL PIPE TO GRADE.
4. PLACE AND COMPACT THE HAUNCH AREA UP TO THE SPRINGLINE.
5. COMPLETE BACKFILL ACCORDING TO SPECIFICATIONS.

MINIMUM COVER FOR CONSTRUCTION LOADS

<table>
<thead>
<tr>
<th>NOMINAL PIPE DIA. (IN.)</th>
<th>MINIMUM COVER (FT) FOR INDICATED AXLE LOADS (THOUSANDS OF POUNDS)</th>
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MINIMUM COVER LIMITS ARE NOT SUFFICIENT FOR SILTY SAND OR SILTY GRAVEL, STRUCTURAL BACKFILL COMPACTED TO 90% STANDARD PROCTOR DENSITY. THE CONTRACTOR SHALL PROVIDE MINIMUM COVER PLUS ANY ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. IN UNPAVED SITUATIONS, THE SURFACE MUST BE MAINTAINED TO A LEVEL AND NON-RUTTED CONDITION.
## Fill Height Limits

<table>
<thead>
<tr>
<th>Structural Backfill</th>
<th>Specified Nominal Dia of Pipe (In.)</th>
<th>Double Wall Polypropylene</th>
<th>Triple Wall Polypropylene</th>
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<td>Compaction 90% SPD (Min.)</td>
<td>Compaction 95% SPD (Min.)</td>
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**Notes:**
2. Fill height measured from the top of pipe to surface.
3. Limits account for short-term temporary water table depths of five feet above springline. Tables are not applicable for long-term permanent water table depths above springline.
4. Polypropylene pipe used for storm sewers under the influence of a pavement section which has 3500 ADT or greater are limited to the shaded values.
CONC PVMT REPAIR

NTS

10" NON REINFORCED CONC OVER 2" CLEAN STN BASE

SEAL OVERCUT W/ BITUMINOUS SEALER

3/4" CLEAN STN BKFILL OR FLOWABLE FILL WHEN UNDER STREET OR DRIVES. EXTEND TO 4' EACH SIDE OF CURB OR PVMT WHEN XING STREET.

FINAL SAW CUT SHALL BE MADE & PVMT REMOVED AFTER TRENCH IS BKFILLED

DENSELY COMPACTED GRANULAR BEDDING & BKFILL AS PER CITY OF JOPLIN SPECS

TRENCH WIDTH AS PER SPECS

SEAL OVERCUT W/ BITUMINOUS SEALER

SAN-05
BREAK MANHOLE WALL. INSTALL PIPE & NEOPRENE GASKET. GROUT WITH CONCRETE & BITUMINOUS COAT OUTSIDE OF PATCH.

REMOVE TROUGH WHERE REQUIRED TO ALLOW FOR A MINIMUM OF 2" CONCRETE. RESHAPE INVERT OF MANHOLE IF REQUIRED.

EXISTING MANHOLE TAP

NTS
MANHOLE ABANDONMENT
N.T.S.

EXISTING PAVEMENT

REMOVE MANHOLE RING & COVER

BACKFILL WITH FLOWABLE FILL OR CONCRETE TO GROUND SURFACE

BREAKLINE

CONCRETE PLUG

EXISTING MANHOLE

REMOVE TOP SECTION TO 42" MINIMUM DEPTH BELOW FINISHED GRADE.

BACKFILL UNDER STREET PAVEMENT OR PARKING AREAS WITH FLOWABLE FILL TO SUBGRADE.

BACKFILL UNDER GRASS AREAS WITH SOIL COMPACTED TO 85% MAXIMUM DRY DENSITY & COVER WITH 4" TOP SOIL.
MH PLUG DETAIL
N.T.S.

REMOVE EXIST SEWER LINE

REM TROUGH WHERE REQUIRED TO ALLOW FOR A MIN OF 2" CONCRETE. RESHAPE INVERT OF MH, IF REQUIRED, WITH ANTI CORROSIVE CONCRETE MIXTURE.

GROUT W/ CONC & BITUMINOUS COAT OUTSIDE OF PATCH

EXIST MH

2' MIN
PRECAST MANHOLE DETAIL

N.T.S.

STANDARD MH FRAME & COVER (SEE DETAIL SAN-10).
FOR MHS INSTALLED IN PAVEMENT IN ARTERIAL
STREETS, STANDARD HINGED LID SHALL BE USED.
(NEENAH R-1650-LM LIFTMATE FRAME & LID WITH 'G'
LOCK), OR APPROVED EQUIVALENT.

FLOW

MIN OPENING
(D) SHALL BE >
MAXIMUM PIPE
DIAMETER

DEPTH TO FL VARIES.
SEE PLAN FOR
REQUIRED DEPTH

#4 REBARS 10" O.C. BOTH WAYS
LID TO BE DEETER 1258 OR EQUIVALENT WITH CITY OF JOPLIN STENCILING (155#)

(1) OPEN PICK HOLE

2" RAISED LETTERING FLUSH W/ TOP SURFACE

TYPE "C" LID DESIGN W/ PERMAGRIP TEXTURE

RING TO BE REVERSIBLE DEETER 1157 OR EQUIVALENT (116#)

(1) 5/8" VENT HOLE 180° FROM OPEN PICK HOLE ON 14 3/4" B.C.

NOTES:
1. FURNISHED WITH MACHINED HORIZONTAL BEARING SURFACE.
2. RING IS REVERSIBLE AND CAN BE INSTALLED WITH FLANGE UP OR DOWN.
3. AVAILABLE HEIGHTS (H) ARE 4", 7.5", & 8".

MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B  FINISH: NO PAINT
GENERAL NOTES:
1. CONTRACTOR TO REMOVE THE PAVEMENT WITHIN A MINIMUM 12" OF THE MANHOLE FRAME & LID FULL DEPTH OF THE MANHOLE FRAME. THE INTENT IS TO EXPOSE THE ENTIRE FRAME TO REMOVE IT & ANY ADJUSTMENT RINGS THAT ARE DAMAGED.
2. EXISTING MANHOLE VARY IN DEPTH BASED ON THE STYLE OF LID & FRAME THAT WAS USED PRIOR TO EXISTING CITY STANDARD. SO IF AN ADJUSTING RING IS ALSO NEEDING REPLACED THEN THE PAVEMENT DEPTH REMOVAL WILL BE DEEPER THAN JUST THE MANHOLE FRAME.

METHOD #1

SAN-12
GENERAL NOTES:
1. CONTRACTOR SHALL SAWCUT & REMOVE EXISTING PAVEMENT, FRAME & COVER, & MANHOLE MATERIAL (BRICK, CONCRETE, ADJUSTMENT RINGS, CONCRETE BLOCK, ETC.) AS NECESSARY TO ESTABLISH A FIRM FOUNDATION FOR INSTALLING NEW PRECAST CONCRETE ADJUSTMENT RING & FRAME & COVER.
2. CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO AVOID DROPPING MATERIAL INTO THE EXISTING MANHOLE. ANY MATERIAL THAT FALLS INTO THE MANHOLE SHALL BE REMOVED BY THE CONTRACTOR.
3. ADJUSTMENT RINGS SMALLER THAN 3" SHALL NOT BE ALLOWED.
4. CONCRETE, MANHOLE FRAME, & LID MUST BE FLUSH WITH EXISTING PAVEMENT (WITHIN 1/4" OF FINISH PAVEMENT GRADE).

METHOD #2
OUTSIDE DROP CONNECTION REQUIRED ON ALL MANHOLES WHERE INVERTS DIFFER BY 2' OR MORE.

S=8"
MIN THICKNESS OF CONC ENCASEMENT ALL AROUND PIPE

M=8" WHERE N=8" TO 18"
M=12" WHERE N=21" OR MORE

BRICK DAM SET IN MORTAR

CL OF DROP SEWER TO BE SAME ELEVATION AS SPRING LINE OF MAIN SEWER

FORM CHANNEL TO MAIN SEWER CHANNEL

OUTSIDE DROP MH CONNECTION
N.T.S.

SECTION A-A N.T.S.

TOP VIEW
N.T.S.

OUTSIDE DROP MH CONNECTION
N.T.S.

SAN-14
SERVICE CONNECTION

NOTES:
- TRACER WIRE (NOT SHOWN) MAY BE REQUIRED. SEE STANDARD DETAILS.
- RUBBER SADDLES ARE NOT ALLOWED.
- NO HOLES FOR NEW CONNECTIONS SHALL BE MADE BY HAMMERING, REGARDLESS OF THE EXISTING SEWER MAIN PIPE MATERIAL.
- ALL HOLES FOR NEW CONNECTIONS TO EXISTING PIPE SHALL BE MADE BY CORING IN THE PRESENCE OF THE CITY'S INSPECTOR. ALTERNATIVELY, A PREFABRICATED PVC WYE OR TEE CAN BE INSTALLED, IN WHICH CASE, THE NEW FITTING SHALL BE AFFIXED TO THE EXISTING SEWER MAIN BY MEANS OF A WATERTIGHT RUBBER COUPLING WITH 2 STAINLESS STEEL BANDS, ALL OF WHICH SHALL BE CONCRETE ENCASED PER THE REQUIREMENTS SHOWN ON THE DETAIL ABOVE.

SERVICE CONNECTION
N.T.S.
TRACER WIRE NOTES
1. CONDUCTIVE TYPE PIPE LOCATOR/TRACER WIRE SHALL BE INSTALLED ON SEWER LATERALS TO FACILITATE FUTURE ABOVE-GROUND LOCATING ACTIVITIES, PER MISSOURI STATE STATUTE. 2. THE TRACER WIRE SET OF REQUIREMENTS APPLY UNDER ANY OF THE FOLLOWING CONDITIONS: A) ONLY ON LATERAL PIPES INSTALLED WITHIN THE PUBLIC RIGHT-OF-WAY OR A DEDICATED UTILITY EASEMENT; B) ON LATERALS CONNECTING TO SEWER MAINS INSTALLED PRIOR TO 2016, ONLY IF THE EXCAVATION TO REPAIR AN EXISTING LATERAL EXTENDS TO WITHIN 5 FT (HORIZONTALLY) OF THE SEWER MAIN, AS DETERMINED BY SIGHTING BETWEEN MH COVERS; OR, C) ON LATERAL PIPES INSTALLED AS PART OF A SEWER MAIN EXTENSION. 3. THE WIRE SHALL BE INSTALLED DIRECTLY ON TOP OF THE PIPE AND SECURED TO THE LATERAL BY TAPE AT BASE OF RISER, SEWER MAIN AND EVERY 10’. A STRIP OF DUCT TAPE IS ACCEPTABLE FOR ATTACHMENT. 4. CAP THE END OF THE WIRE INSIDE THE PROTECTIVE ENCLOSURE WITH A THERMOPLASTIC SHELL CONNECTOR RATED FOR DAMP, UNDERGROUND APPLICATIONS (THE MUDBUG BY IDEAL, OR EQUIVALENT). 5. CONDUCTIVITY TO BE TESTED BEFORE ACCEPTANCE.

ADJUSTMENTS TO EXISTING CORROSION PROOF WIRE CONNECTORS SHALL BE USED AT SPLICE LOCATIONS. ELECTRICAL TAPE SHALL BE USED AND NO BARE WIRE SHALL BE EXPOSED. CONDUCTIVITY TO BE TESTED BEFORE ACCEPTANCE.

TRACER WIRE DETAIL

CITY OF JOPLIN, MO
PROJECT
PUBLIC WORKS DEPT
TRACER WIRE
ENGINEERING DIVISION
FOR SERVICE LINES
602 S MAIN ST 64801
FILE: TRACER WIRE
CKD BY: JOHNSON
DATE: 4/2019
ENGINEER: HERTZBERG
CITY OF JOPLIN, MO
PUBLIC WORKS DEPT
ENGINEERING DIVISION
602 S MAIN ST  64801

PROJECT
PROTECTIVE ENCLOSURE
FOR CLEAN OUTS

NOTE
4" OR 6" DIA. SANITARY SEWER CLEAN OUT WITH TRACER WIRE (NOT SHOWN)


2. AVOID LOCATING THE CLEAN OUT AND PROTECTIVE ENCLOSURE IN SIDEWALKS. IF UNAVOIDABLE, REPLACE, PER CITY STANDARDS, THE ENTIRE SIDEWALK PANEL, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

3. THE TOP HAT & COVER ("PROTECTIVE ENCLOSURE") SHALL BE LOCALLY AVAILABLE. LID SHALL HAVE THE WORD "SEWER" IN THE CASTING. EQUIVALENT FRAME AND LID MAY BE SUBSTITUTED WITH THE APPROVAL OF THE ENGINEER.

4. THE PROTECTIVE ENCLOSURE IS NOT REQUIRED AT THE CLEAN OUT NEXT TO A BUILDING, BUT IT IS STRONGLY RECOMMENDED.

5. ALL CONNECTORS USED SHALL BE DIRECT BURIAL RATED AND SHALL BE DIELECTRIC SILICON FILLED TO SEAL OUT MOISTURE AND CORROSION.

PROTECTIVE ENCLOSURE DETAIL

NTS
PRESSURE SEWER CLEAN OUT

& RISER DETAIL

N.T.S.

NOTE: ACCEPTABLE MATERIALS FOR VALVE VAULT & LID ARE CONCRETE, GALVANIZED METAL, PVC, HDPP, & HDPE.
CUT NEAT HOLE IN EXIST MH WALL. INSTALL FORCE MAIN & FILL ANNULAR SPACE W/ NON SHRINKING GROUT.

PRESSURIZED FLOW

SEWER PIPE

GASKET SEAL

TEE

FL ELEV

12" MAX

CUT NEAT HOLE IN EXIST MH WALL. INSTALL FORCE MAIN & FILL ANNULAR SPACE W/ NON SHRINKING GROUT. APPLY 1" THICK CEMENTIOUS LINING WITH ANTI-MICROBIAL ADDITIVE PRIOR TO CONNECTION TO PUMP.

EXISTING PUBLIC MH

PUBLIC PRESSURE
MH CONNECTION DETAIL
N.T.S.

NOTE: PRIVATE PRESSURE LINES TO CONNECT DIRECTLY TO GRAVITY MAIN WITH THRUST BLOCK SUPPORTS AS PER CITY STANDARDS. IF NOT POSSIBLE, THE CONNECTION BELOW MAY BE ALLOWED.

HEAVY DUTY RING & COVER DEETER 1256 MEDIUM DUTY CISTERN RING & SOLID COVER DEETER 1745, OR EQUIVALENT SUBJECT TO APPROVAL.

30" MIN COVER

ANTI-MICROBAL ADDITIVE IN ALL CONCRETE

PRIVATE PRESSURE
MH CONNECTION DETAIL
N.T.S.

CUT NEAT HOLE IN EXIST MH WALL. INSTALL FORCE MAIN & FILL ANNULAR SPACE W/ NON SHRINKING GROUT.

PRESSURIZED FLOW

SEWER PIPE

GASKET SEAL

TEE

FL ELEV

12" MAX

LID "PRESSURE SEWER" OR EQUIVALENT

24"Ø MIN VAULT METER PIT MADE OF NON CORROSIVE MATERIAL (HDPE) BY ADS OR APPROVED EQUIVALENT.

TOP OF CONC BENCH SHAPED TO DIRECT FLOW TO OUTLET PIPE.

GASKET SEAL

LATERAL LINE TO PUBLIC SEWER

HALF PIPE

NON-SHRINK GROUT

SAN-19

PUBLIC WORKS DEPT
ENGINEERING DIVISION
602 S MAIN ST 64801

PRESSURE MH DETAIL

CITY OF JOPLIN, MO
DATE: 2/2019
ENGINEER: HERTZBERG
FILE: PRESSUREMH
THRUST BLOCKS SHALL REST ON UNDISTURBED SOIL & BE POURED CONC., 3000 PSI

FITTING SHALL BE DOUBLE WRAPPED W/ POLYETHYLENE PRIOR TO POURING THRUST BLOCKS.

POUR THRUST BLOCKS AT ALL CALLED LOCATIONS. USE 3 SQ. FT. OF CONCRETE/SOIL CONTACT PER THRUST BLOCK FOR EACH BLOCK

THRUST BLOCK DETAIL
N.T.S.
LAMPHOLE
N.T.S.

CLEANOUT CAP W/ THREADED PLUG IN PROTECTIVE ENCLOSURE

EXIST SURFACE

CALLED OUT STATION

45°

8" PVC

INSTALLATION ALLOWED ONLY UPON CITY ENGINEER'S APPROVAL.
NOTES:
1. SEAL BOTH ENDS OF CASING PIPE W/ WATERTIGHT NEOPRENE ATTACHED WITH 2" STEEL BANDS.
2. ENDS SHALL BE SEALED TO PREVENT THE ENTRANCE OF FOREIGN MATERIAL, BUT SHALL NOT BE TIGHTLY SEALED. Poured CONC CAPS SHALL NOT BE ALLOWED.
3. UTILIZE PIPE SPACERS EVERY 3'.
CONC COLLAR

N.T.S.

2-STAINLESS STEEL BANDS

FLOW

MATCH FL

#4 BAR STIRRUPS HORZ & VERT AT 12" C.C.

8" CONC COVER

WATERTIGHT NEOPRENE TRANSITION COUPLING

D.I.P.

3' MIN.

8" CONC COVER

4"
O.D. + 2E

N.T.S.

CONC ENCASEMENT

18" 42" TO 60"

15" 27" TO 36"

12" 4" TO 24"

E PIPE O.D.

12" 4" TO 24"

15" 27" TO 36"

18" 42" TO 60"

CONC ENCASEMENT
N.T.S.

6" MIN

4" MIN

CLASS 'B'
CONC

E
NOTE:
1. CLEAN OUTS SHALL BE REQUIRED FOR ALL 90° BENDS IN PIPE ALIGNMENT.
2. FOR BENDS LESS THAN 45° INSTALL CLEANOUTS PER THE GUIDELINES FOUND IN THE INTERNATIONAL PLUMBING CODE, LATEST ADOPTED VERSION.

COMMERCIAL/RESIDENTIAL PERMITS FOR SANITARY SEWER

nts
EXIST INLET OR RCB CONNECTION

N.T.S.

PROP STORM PIPE

WATERTIGHT GASKET

BREAKLINE

EXIST PIPE

REM TROUGH WHERE REQUIRED TO ALLOW FOR A MIN OF 2" CONC. RESHAPE INVERT OF INLET IF REQUIRED.

EXIST INLET OR RCB CONNECTION

DATE: 2/2019

FILE: INLETTAP

PROJECT

EXIST INLET OR RCB CONNECTION

CLASS

CITY OF JOPLIN, MO

CHECK BY: JOHNSON

PUBLIC WORKS DEPT

DATE: 2/2019

ENGINEERING DIVISION

ENGINEER: HERTZBERG

602 S MAIN ST 64801

FILE: INLETTAP
SINGLE PRE-CAST TYPE 'A' CATCH BASIN

N.T.S.
FINISH: BLACK EPOXY

NOTES:
1. BOTTOM OF INLET SHALL BE 9" TH W/ #4 REBAR SPACED 10" OC BOTH WAYS.
2. FLOOR OF INLET SHALL BE SHAPED W/ INV TO PROVIDE SMOOTH FLOW.
3. STEPS ARE NOT ALLOWED.
4. BEVEL ALL EXPOSED EDGES W/ 3/4" CHAMFER OR 1/2" TOOLED EDGE.
5. THE SUM OF "L" & "W" SHALL NOT EXCEED 14' WITHOUT SPECIAL DESIGN.
6. ALL GUTTER CONST IN FRONT OF INLET, ALL C&G IN CURB REPAIRS OR REPLACEMENTS & ALL SIDEWALK CONST AROUND INLET SHALL BE INCLUDED IN THE BID PRICE OF THE INLET.
7. SAW CUT & REPL AN EXTRA 2' OF CURB ON BOTH SIDES WHEN CONST IN EXIST CURB.
8. ALL Poured CONCRETE SHALL BE CLASS 'B'.
9. EDGE OF BOX SHALL BE A MINIMUM OF 15' FROM CURB RADIUS PC.
SECTION A-A
SCALE = NTS

INLET NOTES:
1. BOTTOM OF INLET SHALL BE 9" TH WITH #4 REBAR SPACED 10" OC BOTH WAYS.
2. FLOOR OF INLET SHALL BE SHAPED WITH INVERT TO PROVIDE SMOOTH FLOW.
3. STEPS ARE NOT ALLOWED.
4. BEVEL ALL EXPOSED EDGES WITH 3/4" CHAMFER OR 1/2" TOOLED EDGE.
5. THE SUM OF "L" & "W" SHALL NOT EXCEED 14' WITHOUT SPECIAL DESIGN.
6. ALL GUTTER CONSTRUCTED IN FRONT OF INLET, ALL C&G IN CURB REPAIRS OR REPLACEMENTS & ALL SIDEWALK CONST AROUND INLET SHALL BE INCLUDED IN THE BID PRICE OF THE INLET.
7. SAW CUT & REPL AN EXTRA 2' OF CURB ON BOTH SIDES WHEN CONST IN EXIST CURB.
8. ALL POURED CONCRETE SHALL BE CLASS 'B'.
9. EDGE OF BOX SHALL BE A MINIMUM OF 15' FROM CURB RADIUS PC.

PLAN VIEW
SCALE = NTS

NOTES:
1. BID ITEM LIMIT TO INCLUDE THE C & G, SIDEWALK, & ANY SEED & MULCH NEEDED WITHIN 2' OF BOX FACES.
2. BOX CAN BE CAST-IN-PLACE OR PRECAST.
PLAN SINGLE CURB INLET - TYPE 'D'
N.T.S.

NOTES:
1. BOTTOM OF INLET SHALL BE 9" THICK W/ #4 REBAR SPACED 10" OC BOTH WAYS.
2. FLOOR OF INLET SHALL BE SHAPED W/ INVERT TO PROVIDE SMOOTH FLOW.
3. NO STEPS ARE ALLOWED.
4. BEVEL ALL EXPOSED EDGES W/ 3/4" CHAMFER OR 1/2" TOOLED EDGE.
5. THE SUM OF "L" & "W" SHALL NOT EXCEED 14' WITHOUT SPECIAL DESIGN.
6. ALL GUTTER CONST IN FRONT OF INLET, ALL C & G IN CURB TRANSITIONS, & ALL
   SIDEWALK CONST AROUND INLET SHALL BE INCL IN THE BID PRICE OF THE INLET.
7. ALL Poured CONC SHALL BE CLASS 'B'.
8. EDGE OF BOX SHALL BE A MINIMUM OF 15' FROM CURB RADIUS PC.

TYPE 'D' INLET
SECTION A-A
(PRECAST) N.T.S.

BOTTOM & INV SHALL BE POURED MONOLITHIC
UNLESS SOIL CONDITIONS REQUIRE POURING
BASE SLAB BEFORE SETTING STRUCTURE.
NOTE:
THIS LID IS FOR INSTALLATIONS BEHIND STREET CURBS.
FOR INSTALLATIONS SUBJECT TO TRAFFIC LOADS IN
PUBLIC ROADS, USE STANDARD SANITARY SEWER MH LID.

NOTES:
1. FURNISHED WITH MACHINED
   HORIZONTAL BEARING SURFACE.
2. RING IS REVERSIBLE AND CAN BE
   INSTALLED WITH FLANGE UP OR DOWN.
3. AVAILABLE HEIGHTS (H) ARE 4", 7.5", & 8".

MATERIAL: CAST GRAY IRON ASTM A-48,
CLASS 35B   FINISH: NO PAINT
CONSTRUCT 6" X 18" CONCRETE TOE WALL AT START & END OF DITCH & ALSO EVERY 100'
NOTES:
1. AGGREGATE FOR DRAINAGE SHALL BE IN ACCORDANCE WITH SEC 1009, GRADE 4 OR GRADE 5.
2. USE HARDWARE CLOTH 24 GAUGE WIRE MESH WITH 1/4 INCH MESH OPENINGS.
3. INSTALL 5’ T-POST WITH A 2’ EMBEDMENT DEPTH (LT).
4. ATTACH HARDWARE CLOTH TO POST WITH WIRE STAPLE OR OTHER ACCEPTABLE METHODS.
5. SPACE POST A MAXIMUM OF 3’.
6. FOR INSTALLATION BETWEEN SECTIONS OF SILT FENCE, EXTEND AGGREGATE FOR DRAINAGE A MINIMUM OF 12” ON EACH SIDE OF SPECIAL SEDIMENT CONTROL FENCE SECTION.
7. INSTALLATION SHALL BE FOR AREA INLETS & PERIMETER PROTECTION BMP’S.
TYPICAL SECTION
5 LANE ARTERIAL W/ NO BIKE LANES

5' MIN WALK WIDTH IF
NOT AGAINST CURB

80' TO 90' R/W TYP

60' TO BC

6' WALK

1% MIN
2% MAX

1.5%

1.5%

66' TO BC

55'

1.5%

1.5%

2" ASPHALTIC CONC
OVER 8" BLACK BASE OVER 8" LIMESTONE BASE

BACKSLOPE ON 3:1 SL MAX
WITH 2" BLACK DIRT & SEED, MULCH, & FERTILIZE BOTH SIDES

CLASS 'A' OR CLASS 'B' CONC SIDEWALK BOTH SIDES

STD 6" UPRIGHT C&G OVER 6" LIMESTONE BASE BOTH SIDES

TYPICAL SECTION
5 LANE ARTERIAL W/ BIKE LANES

5' MIN WALK WIDTH IF
NOT AGAINST CURB

90' TO 100' R/W TYP

66' TO BC

61'

1.5%

1.5%

2" ASPHALTIC CONC
OVER 8" BLACK BASE OVER 8" LIMESTONE BASE

BACKSLOPE ON 3:1 SL MAX
WITH 2" BLACK DIRT & SEED, MULCH, & FERTILIZE BOTH SIDES

CLASS 'A' OR CLASS 'B' CONC SIDEWALK BOTH SIDES

STD 6" UPRIGHT C&G OVER 6" LIMESTONE BASE BOTH SIDES

CITY OF JOPLIN, MO
PUBLIC WORKS DEPT
ENGINEERING DIVISION
602 S MAIN ST 64801

ENGINEER: HERTZBERG
FILE: ARTERALTYP2

PROJECT
TYPICAL SECTIONS
ARTERIAL STREETS

ST-01
TYPICAL SECTION

N.T.S.

20’ R/W TYP

16’ PVMT WIDTH

2.00%

2” INVERT

2” ASPHALTIC CONC OVER 6” LIMESTONE BASE

BACKSLOPE ON 3:1 SL MAX W/ 2” BLACK DIRT & SEED, MULCH, & FERTILIZE BOTH SIDES.
NOTES:
1. CONSTRUCT EXPANSION JOINTS AT THE START & END OF EVERY DRIVEWAY & CURB INLET.
2. CONSTRUCT CONTRACTION JOINTS EVERY 10' MAXIMUM.
3. JOINT MATERIAL TO EXTEND THRU C & G, FRONT TO BACK, & NEATLY TRIMMED TO MATCH CONC SURFACE.
4. FLOAT GROUT TO SURFACE ON EXPOSED SURFACES.
5. ALL POURED CONCRETE SHALL BE CLASS 'B'.

STD UPRIGHT C & G

N.T.S.
**NOTES:**

1. ALL POUR ED CONCRETE SHALL BE REINFORCED CLASS "B".
2. STEEL REINFORCEMENT IN PAVEMENT SLAB IS OPTIONAL.
3. BID PRICE FOR ALL CURB & PAVEMENT SHALL INCLUDE ALL EXCAVATION, LABOR, & MATERIALS REQUIRED TO CONSTRUCT CURB & PAVEMENT.

---

**LEGEND:**

- PERMISSIBLE CONSTRUCTION JOINT. IF CONSTRUCTED IN THIS MANNER TIE BARS MUST BE USED.
- #4 TIE BAR AT 24" CENTERS. LENGTH OF THE TIE BARS EQUALS THICKNESS OF PAVEMENT PLUS HEIGHT OF CURB, LESS 3".
- TOP OF PAVEMENT OR CONCRETE BASE.
- ROUND TO 1/2" RADIUS. (EXCEPT FOR SAWED JOINTS)
- ROUND TO 1 1/2" RADIUS.

---

**TYPE A INTEGRAL CURB**

**NOT TO SCALE**

---

**TYPE S CONCRETE CURB**

**NOT TO SCALE**

---

**ST-05**
NOTE: USE 1/2" INVERT WITH A 10' GUTTER XING.

1. IF CURB & GUTTER IS EXISTING, PLACE EXPANSION JOINT MATERIAL BETWEEN GUTTER & THE NEW GUTTER XING.
2. IF NO CURB & GUTTER EXISTS, CONSTRUCTION OF CURB, GUTTER, & GUTTER XING SHALL BE MONOLITHIC.
FLUME DETAIL
N.T.S.

8" CONC GUTTER XING
2' RAD

SLOPE ON GRADE

6" X 12" TOE WALL

5' LG X 6' WIDE X 4" CONC PAD. CONST RADII & CURB.

2' RAD

CONCRETE FLUME
NOTES:
1. STEEL REINFORCEMENT IS NOT ALLOWED.
2. ALL GUTTER CONST IN FRONT OF DRIVEWAY & ALL C & G IN DRIVEWAY TRANSITIONS SHALL BE INCLUDED IN THE BID PRICE OF THE DRIVEWAY.
3. BID PRICE FOR ALL DRIVEWAYS SHALL INCLUDE ALL EXCAVATION, LABOR, & MATERIALS REQUIRED TO CONSTRUCT DRIVEWAY.
4. * = 1.5" DEPRESSED CURB (CHAMFERED) ALLOWED WHEN NEEDED FOR DRAINAGE OR SIDEWALK GRADE.
5. 5' INCREMENTS FOR GRADE CHANGES IN DRIVEWAY ARE ALLOWED TO MEET EXIST GRADE.
6. ALGEBRAIC DIFFERENCE AT GRADE CHANGES ARE NOT TO EXCEED 13%.
7. EXPANSION JOINTS SHALL BE CONSTRUCTED NEAR PROPERTY LINE & THROUGH C & G ADJACENT TO DRIVEWAY.
8. OPTIONAL CONSTRUCTION JOINTS MAY BE USED AT GRADE CHANGES IN DRIVEWAY.
9. RAMPS NOT TO EXCEED 30" VERTICALLY WITHOUT 5' X 5' LANDING.
NOTES:
1. STEEL REINFORCEMENT IS NOT ALLOWED.
2. ALL GUTTER CONST IN FRONT OF DRIVEWAY & ALL C & G IN DRIVEWAY TRANSITIONS SHALL BE INCLUDED IN THE BID PRICE OF THE DRIVEWAY.
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NOTES:
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5. 5' INCREMENTS FOR GRADE CHANGES IN DRIVEWAY ARE ALLOWED TO MEET EXIST GRADE.
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7. EXPANSION JOINTS SHALL BE CONSTRUCTED NEAR PROPERTY LINE & THROUGH C & G ADJACENT TO DRIVEWAY.
8. OPTIONAL CONSTRUCTION JOINTS MAY BE USED AT GRADE CHANGES IN DRIVEWAY.
9. RAMPS NOT TO EXCEED 30° VERTICALLY WITHOUT 5' X5' LANDING.
1. CONSTRUCT EXPANSION JOINTS AT THE START & END OF EVERY DRIVEWAY & CURB INLET.
2. CONSTRUCT CONTRACTION JOINTS EVERY 10' MAXIMUM.
3. USE CLASS 'B' CONCRETE.
4. REINFORCEMENT IS OPTIONAL.
5. CROSS SLOPE OF WALK & DIRT BACKSLOPE CAN SLOPE AWAY FROM CURB IN FILL.
HANDRAIL DETAIL

1 1/2" WELDED ROUND GALVANIZED STEEL PIPE OR 2"X2" SQUARE

15" MIN 18" MAX
8" MIN 12" MAX

SEE MODOT STD. 608.20E FOR ADDITIONAL DETAILS

12" POSTS 8" DEEP IN CONC WALL OR FOOTING OR 12" DEEP IF ATTACHED W/ BASE PLATES

5' MIN 8' MAX
5' MIN 8' MAX
12" MIN 15" MAX

BASE PLATE DETAIL

5/8" DIA HOLES
P 3/8"X6"X6"
6063-T6 ALUM

NO OBSTRUCTIONS ALLOWED IN WALKING PATH

CONC FOOTING DETAIL

12"X12"X18" DEEP CONC FOOTING

GENERAL NOTES:
1. BASEPLATES SHALL BE ALUMINUM ALLOY 6061-T6 OR 6063-T6.
2. BASEPLATE BOLTS SHALL BE 5/8" X 1 1/2" LONG.
3. IF PRE-MANUFACTURED HANDRAIL COMPONENTS ARE TO BE USED, PRIOR APPROVAL IS REQUIRED.
4. ALL JOINTS SHALL BE CONTINUOUS WELDED.
INSTALL 4' TALL FENCE ON TOP FOR WALL GREATER THAN 2'-6" TALL. TYPE TO BE DETERMINED IN THE FIELD.

2" CLR

5' MAX DISTANCE

8" CONCRETE
f'c= 3000 PSI. Fy= 60000 PSI.

#4'S @ 12" O.C.E.W.

#5'S @ 12" O.C.E.W.

#5'S @ 14" O.C.

7 #5'S EQUALLY SPACED

#5'S @ 14" O.C.

W.H. @ 10' O.C. 1" DIA MIN

2" CLR 1% MIN / 2% MAX

2" CLR

6' - 0"

6' - 8"

PROPOSED C&G & PVMT

CONST 1/2" EXPANSION JOINTS IN WALL & SIDEWALK EVERY 50'. JOINTS TO MATCH.

POURED CONCRETE SIDEWALK WALL

NTS

ST-13
NOTES:
1. ALL GUTTER CONSTRUCTED IN FRONT OF RAMP & ALL CURB & GUTTER IN RAMP TRANSITIONS SHALL BE INCLUDED IN THE BID PRICE OF THE CURB & GUTTER.
2. BID PRICE (PAID BY SY) FOR ALL RAMPS SHALL INCLUDE ALL EXCAVATION, LABOR & MATERIALS REQUIRED TO CONSTRUCT RAMP.
3. ALL Poured CONCRETE SHALL BE FIBER REINFORCED CLASS "B".
4. RAMP WIDTH MAY BE REDUCED TO 4' WITH APPROVAL OF THE ENGINEER.
5. TYPE A CURB & ADA DOMED PAVERS SHALL BE INCLUDED IN PRICE OF RAMP.
6. CROSs SLOPe OF LANDING AREAS DO NOT EXCEED 2% IN ANY DIRECTION.
7. RAMP SHALL NOT EXCEED 30" VERTICALLY WITHOUT 5' X 5' LANDING.

TYPE "A" ADA RAMP

NOT TO SCALE
NOTES:
1. ALL GUTTER CONST IN FRONT OF RAMP & ALL C&G IN RAMP
   TRANSITIONS SHALL BE INCLUDED IN THE BID PRICE OF THE C&G.
2. BID PRICE (PAID BY SY) FOR ALL RAMPS SHALL INCLUDE ALL
   EXCAVATION, LABOR, & MATERIALS REQUIRED TO CONST RAMP.
3. ALL POURED CONCRETE SHALL BE CLASS 'B' FIBER REINFORCED.
4. RAMPS NOT TO EXCEED 30" VERTICALLY WITHOUT 5' X 5' LANDING.

SECTION
N.T.S.

TYPE 'B'
ADA RAMP
N.T.S.

PLAN VIEW
N.T.S.

CITY OF JOPLIN, MO  CKD BY:  JOHNSON
PUBLIC WORKS DEPT  DATE:  2/2019
ENGINEERING DIVISION  ENGINEER:  HERTZBERG
602 S MAIN ST 64801  FILE:  TYPEBADARAMP
NOTES:
1. ALL GUTTER CONST IN FRONT OF RAMP & ALL C&G IN RAMP TRANSITIONS SHALL BE INCLUDE IN THE BID PRICE OF THE C&G.
2. BID PRICE (PAID BY SY) FOR ALL RAMPS SHALL INCLUDE ALL EXCAVATION, LABOR, & MATERIALS REQUIRED TO CONST RAMP.
3. ALL POURED CONC SHALL BE CLASS 'B' FIBER REINFORCED.
4. RAMPS SHALL NOT EXCEED 30" VERTICALLY WITHOUT 5' X 5' LANDING.
NOTES:
1. BID PRICE (PAID BY SY) FOR ALL RAMPS SHALL INCLUDE ALL EXCAVATION, LABOR, & MATERIALS REQUIRED TO CONSTRUCT RAMP.
2. ALL POURRED CONCRETE SHALL BE CLASS 'B', 6" THICK, FIBER REINFORCED WITH 2" COMPACTED STONE.
3. DETECTABLE WARNING DEVICES REQUIRED AT PUBLIC STREET & SIGNALIZED ENTRANCES.
4. RAMP WIDTH MAY BE REDUCED TO 4' WITH APPROVAL OF THE ENGINEER.
5. TYPE A CURB & ADA DOMED PAVERS SHALL BE INCLUDED IN PRICE OF RAMP.
6. RAMPS SHALL NOT EXCEED 30" VERTICALLY WITHOUT 5' X 5' LANDING.

ST-17
POST SPECIFICATIONS

<table>
<thead>
<tr>
<th>POST SIZE</th>
<th>OUTSIDE Ø</th>
<th>WALL TH</th>
<th>MATERIAL</th>
<th>** COATING</th>
<th>MAX ALLOW MOMENT</th>
<th>PAID FOR AS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>2.375&quot;</td>
<td>.080&quot;</td>
<td>ASTM-513</td>
<td>ASTM A-653 G-210 WITH 3.0 MIL POLYMER COATING PER ASTM A123 CLEAR COATING</td>
<td>1.47 KIP FT</td>
<td>STEEL SIGN SUPPORT (2 INCH ROUND)</td>
</tr>
<tr>
<td>P1</td>
<td>2.875&quot;</td>
<td>.160&quot;</td>
<td>ASTM-513</td>
<td>GC HOT DIPPED PER ASTM-123</td>
<td>4.02 KIP FT</td>
<td>STEEL SIGN SUPPORT (2 1/2 INCH ROUND NP-40)</td>
</tr>
<tr>
<td>P2</td>
<td>2.875&quot;</td>
<td>.276&quot;</td>
<td>ASTM-500</td>
<td>GC HOT DIPPED PER ASTM-123</td>
<td>5.13 KIP FT</td>
<td>STEEL SIGN SUPPORT (2 1/2 INCH ROUND SCH 80)</td>
</tr>
</tbody>
</table>

** COLOR POWDER COATING MAY BE ADDED ACCORDING TO MANUFACTURER SPECIFICATIONS FOR SPECIAL LOCATIONS WHEN SHOWN ON PLANS.

TUBULAR STEEL POSTS
(SOCKET SYSTEM)
(FOR USE WITH ALL P-POST INSTALLATIONS)

TUBULAR CONCRETE FOOTING-12 GA GALVANIZED STEEL ASTM-787
CHART NOTES:
1. TYPICAL POST MOUNTING HEIGHTS FROM GROUND TO BOTTOM OF SIGN PANEL ARE 7', 8', OR 9'. OTHER HEIGHTS MAY BE REQUIRED WHEN SIGNS ARE MOUNTED ON STEEPER FILL OR CUT SLOPES.
2. FOR SIGNS MOUNTED ON TWO POSTS, THE MINIMUM DISTANCE BETWEEN POSTS SHALL BE 2' & THE MAXIMUM DISTANCE SHALL BE 8'. DISTANCE FROM POST TO EDGE OF SIGN PANELS SHALL 0" TO 4". WHEN BACKING ZEES ARE USED, POSTS SHALL BE INSTALLED WITH A MINIMUM OF 2" TO THE EDGE OF THE BACKING ZEE.
3. ALL SIDE PANELS GREATER THAN 60" IN WIDTH MUST BE MOUNTED ON 2 POSTS TO PREVENT TURNING.
4. THE POST SIZES SHOWN ARE THE MINIMUM SIZES REQUIRED. TWO P1 POSTS MAY SUBSTITUTED WHEN ONE P2 POST IS INDICATED. P2 POSTS MAY BE SUBSTITUTED FOR P1 POSTS WHEN DIRECTED BY THE ENGINEER.

SIGN POST SELECTION GUIDE
(90 MPH WIND LOAD DESIGN)
(FOR SOCKET SYSTEM & SLIPBASE INSTALLATIONS USING P, P1, OR P2 POSTS)

GENERAL NOTES:
1. SIGNS BETWEEN 37" & 60" WIDTH WITH ONE POST INSTALLATION REQUIRE A 'T' OR 'U' SIGN SUPPORT BRACKET IN ADDITION TO THE BACKING ZEE REQUIREMENTS. WHEN DIRECTED BY THE ENGINEER, SIGN PANELS LESS THAN 48" MAY BE ATTACHED DIRECTLY TO 'T' OR 'U' BRACKETS WITHOUT ZEES.
2. U-BRACKETS MAY BE USED FOR MULTIPLE SIGN INSTALLATIONS.