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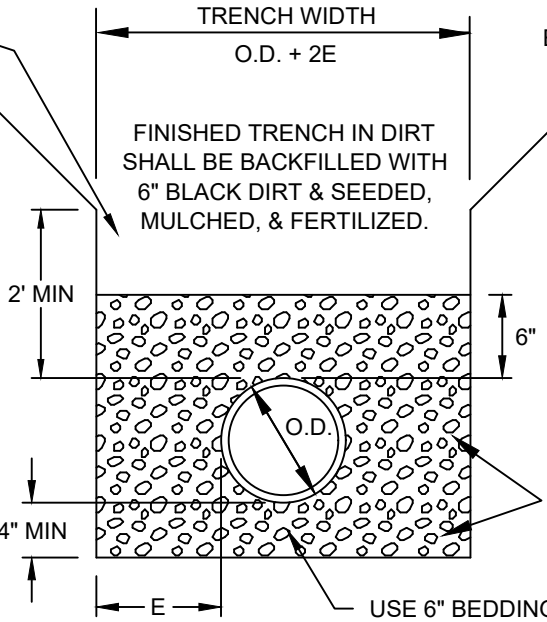
ST - 01 TYPICAL SECTIONS ARTERIAL STREETS
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CONC PVMT REPAIR & CRUSHED STN BKFILL WHEN UNDER STREET OR DRIVES. EXTEND TO 4' EACH SIDE OF CURB OR PVMT WHEN XING STREET.

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



E	PIPE O.D.
12"	4" TO 24"
15"	27" TO 36"
18"	42" TO 60"

PIPE BEDDING DETAIL

NTS

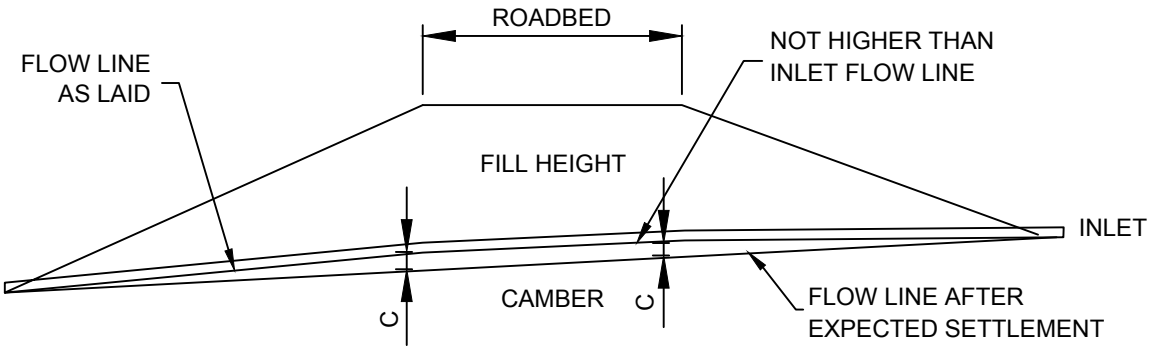
SAN-01

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 12/2020	PIPE BEDDING DETAIL
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: BEDDET	

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SAN-02

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PLACE HOLDER
	PUBLIC WORKS DEPT	DATE: 1/2021	
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE:	



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				
NOMINAL PIPE DIA. (IN.)	MINIMUM COVER (FT) FOR INDICATED AXLE LOADS (THOUSANDS OF POUNDS)			
	18-50	50-75	75-110	110-150
12-36	2.0	2.5	3.0	3.0
42-60	3.0	3.0	3.5	4.0

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.

SAN-03

CITY OF Joplin

CITY OF JOPLIN, MO	CKD BY:	JOHNSON	POLYPROPYLENE (FLEXIBLE) PIPE INSTALLATION METHODS
PUBLIC WORKS DEPT	DATE:	2/2019	
ENGINEERING DIVISION	ENGINEER:	HERTZBERG	
602 S MAIN ST 64801	FILE:	POLYPRO2	

FILL HEIGHT LIMITS

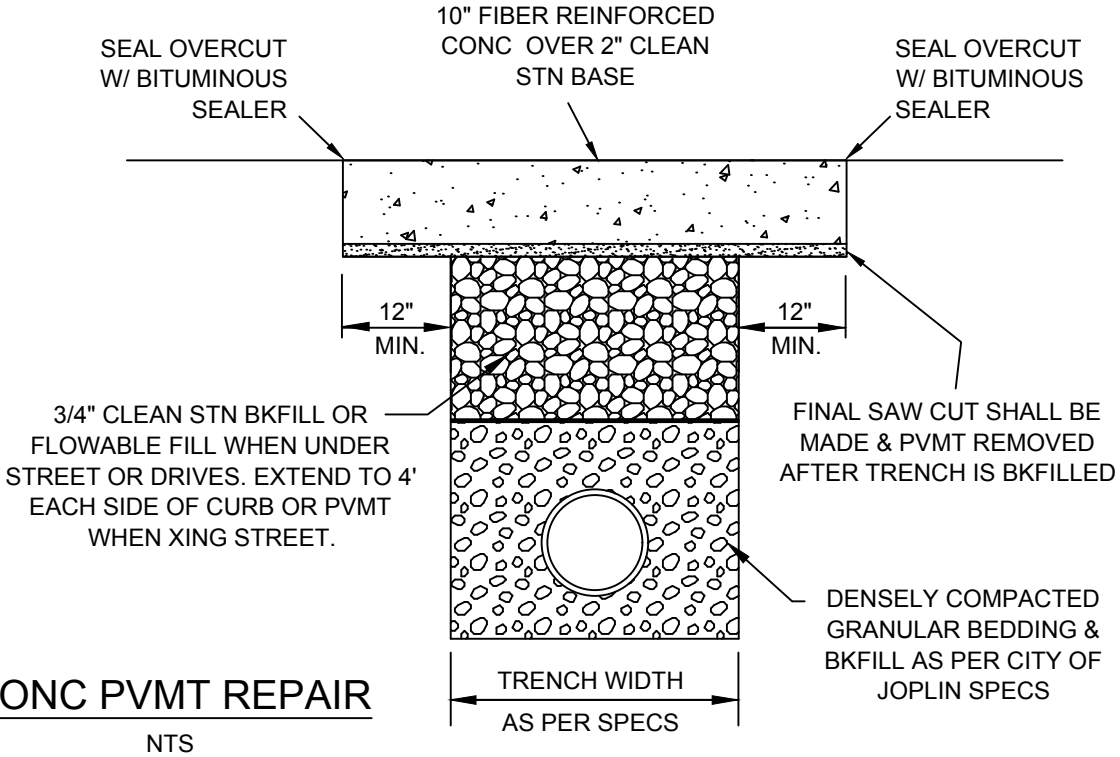
STRUCTURAL BACKFILL	SPECIFIED NOMINAL DIA OF PIPE (IN.)	DOUBLE WALL POLYPROPYLENE				TRIPLE WALL POLYPROPYLENE			
		COMPACTION 90% SPD		COMPACTION 95% SPD		COMPACTION 90% SPD		COMPACTION 95% SPD	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
GRAVEL (AASHTO M145 SOIL TYPE A1 & A3)	12	2'	21'	2'	29'	--	—	--	--
	15	2'	22'	2'	31'	--	—	--	--
	18	2'	19'	2'	27'	--	—	--	--
	24	2'	16'	2'	22'	--	—	--	--
	30	2'	11'	2'	15'	2'	17'	2'	23'
	36	--	—	--	--	2'	15'	2'	21'
	42	--	—	--	--	2'	19'	2'	27'
	48	--	—	--	--	2'	12'	2'	17'
	60	--	—	--	--	2'	16'	2'	23'
COURSE SAND (AASHTO M145 SOIL TYPE A-1-b)	12	2'	18'	2'	24'	--	—	--	--
	15	2'	22'	2'	31'	--	—	--	--
	18	2'	16'	2'	21'	--	—	--	--
	24	2'	13'	2'	17'	--	—	--	--
	30	2'	7'	2'	10'	2'	17'	2'	23'
	36	--	—	--	--	2'	15'	2'	21'
	42	--	—	--	--	2'	19'	2'	27'
	48	--	—	--	--	2'	12'	2'	17'
	60	--	—	--	--	2'	16'	2'	23'
SILTY SAND OR SILTY GRAVEL (AASHTO M145 SOIL TYPES A-2-4 & A-2-5)	12	2.8'	11'	2'	19'	--	—	--	--
	15	2.8'	11'	2'	23'	--	—	--	--
	18	3'	11'	2'	16'	--	—	--	--
	24	3.3'	10'	2'	13'	--	—	--	--
	30	3.4'	6'	2'	7'	3'	10'	2'	17'
	36	--	—	--	--	3.3'	10'	2'	15'
	42	--	—	--	--	3.2'	11'	2'	20'
	48	--	—	--	--	3.1'	9'	2'	13'
	60	--	—	--	--	2'	10'	2'	17'

NOTES:

1. SPD = STANDARD PROCTOR DENSITY.
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.

CITY OF Joplin

CITY OF JOPLIN, MO	CKD BY:	JOHNSON	POLYPROPYLENE (FLEXIBLE) PIPE INSTALLATION METHODS
PUBLIC WORKS DEPT	DATE:	2/2019	
ENGINEERING DIVISION	ENGINEER:	HERTZBERG	
602 S MAIN ST 64801	FILE:	POLYPRO3	



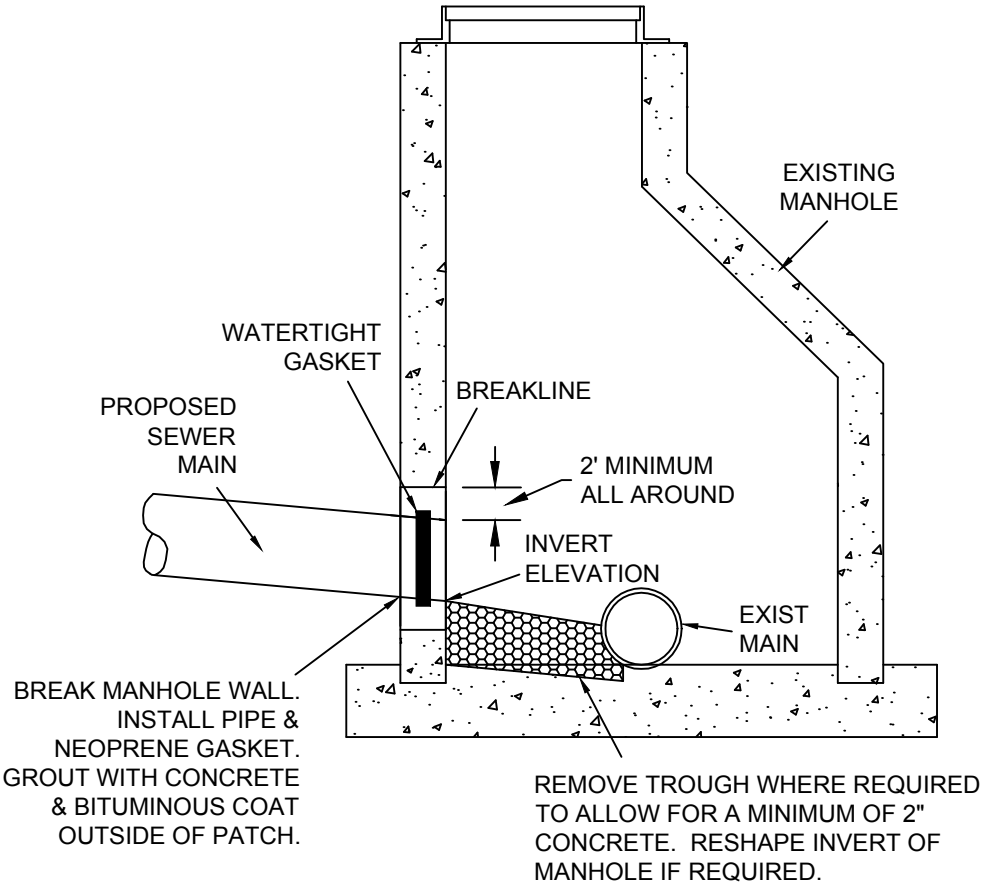
CONC PVMT REPAIR

NTS

NOTES:
1. BLACK DYE PER CITY OF JOPLIN SPECIFICATIONS 1700.3.12

SAN-05

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	CONC PVMT REPAIR
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: PVMTREPR	

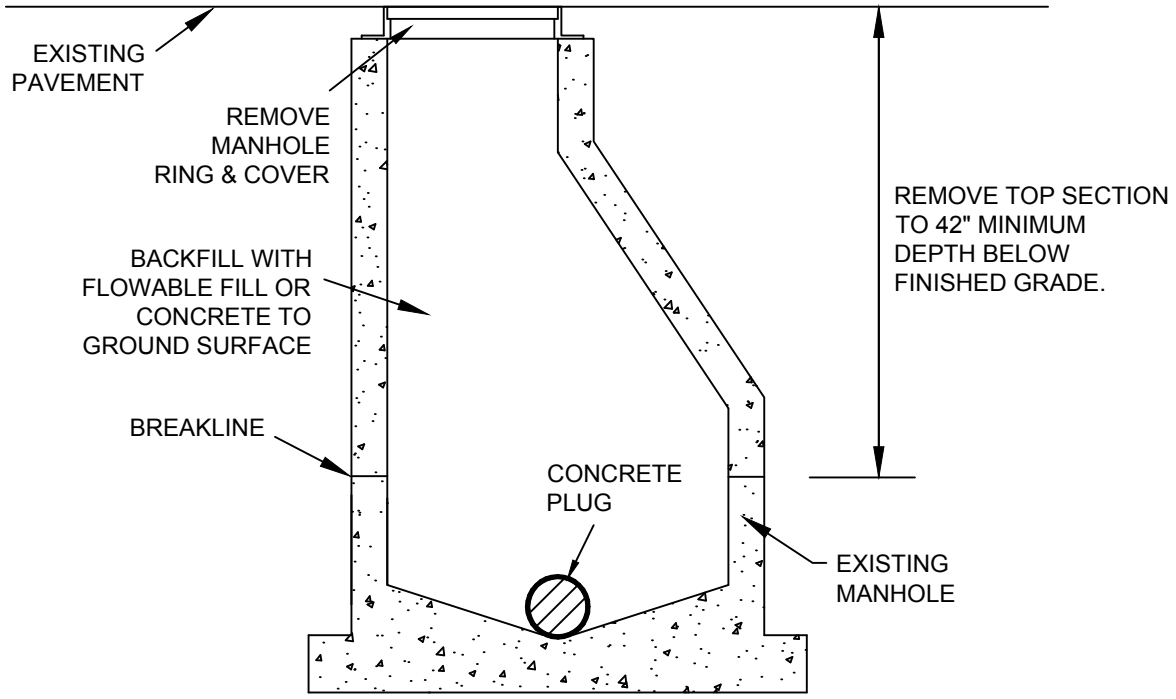


EXISTING
MANHOLE TAP

NTS

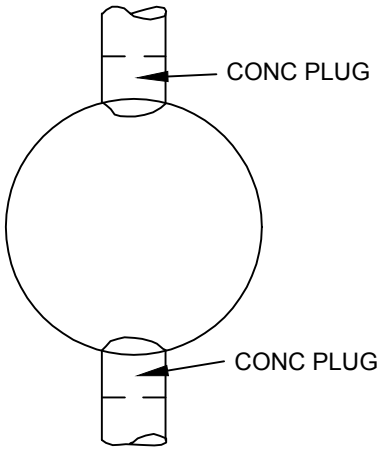
SAN-06

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT EXISTING MANHOLE TAP
	PUBLIC WORKS DEPT	DATE: 2/2019	
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: MHTAP	



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.

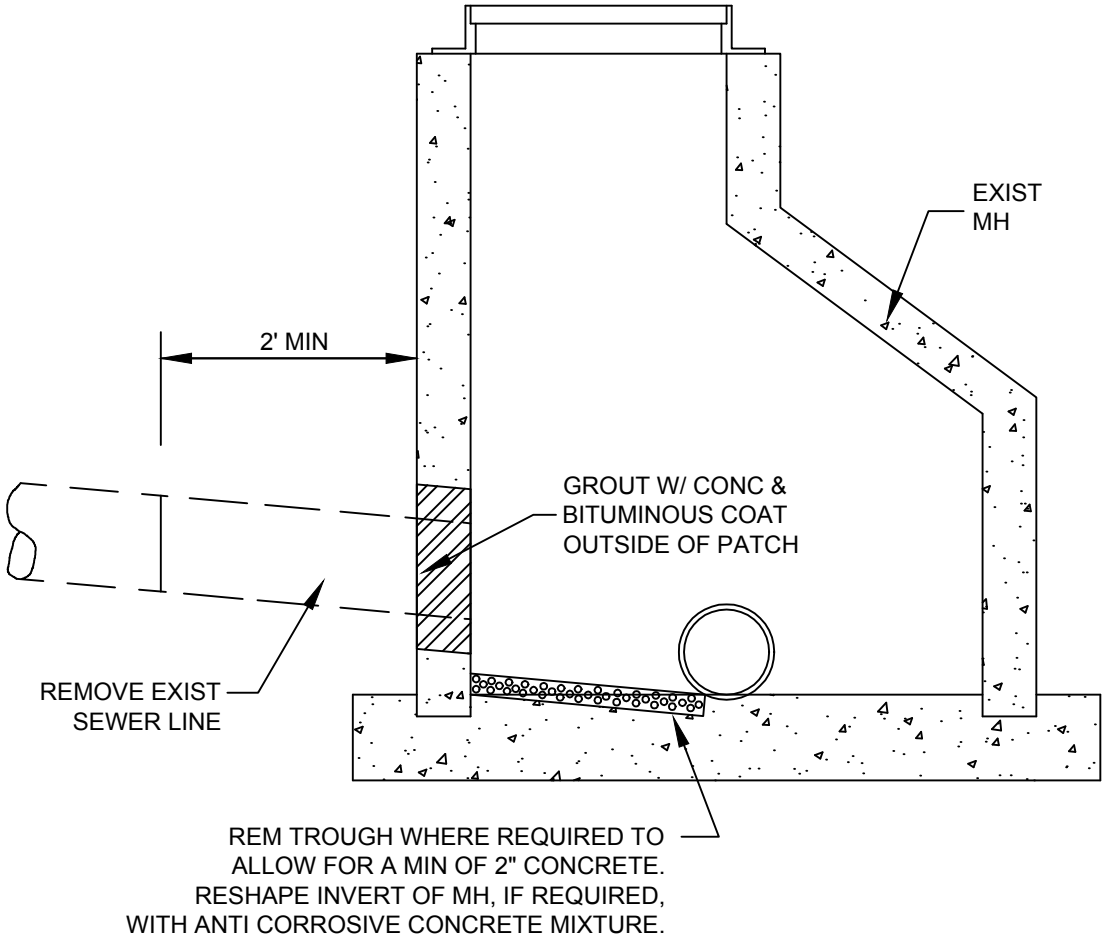


MANHOLE ABANDONMENT

N.T.S.

SAN-07

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	MANHOLE ABANDONMENT
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: MHABANDN	

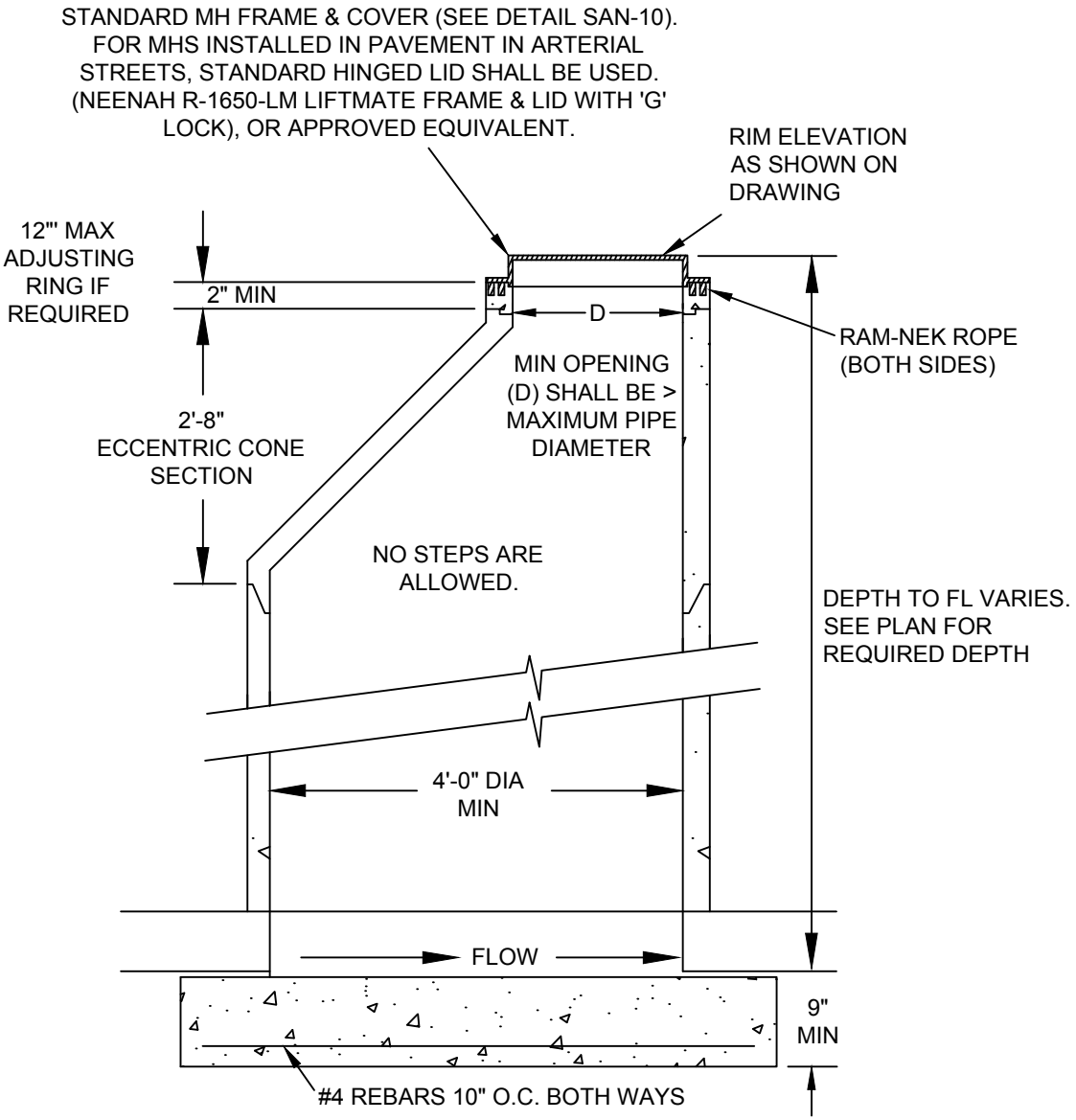


MH PLUG DETAIL

N.T.S.

SAN-08

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	MH PLUG
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: MHPLUG	

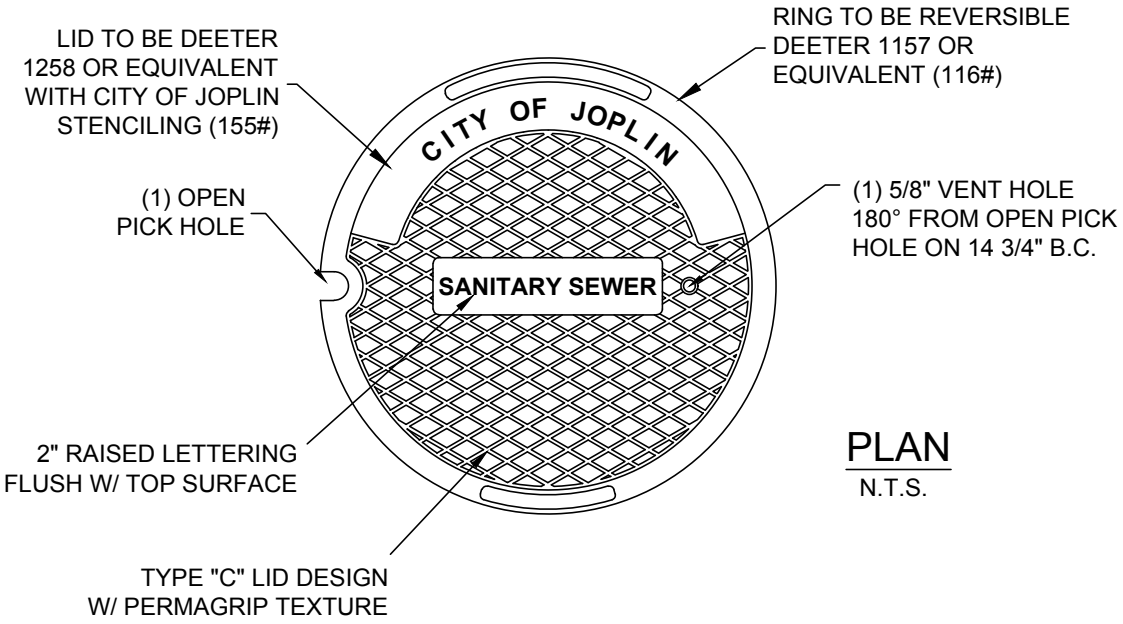


PRECAST MANHOLE DETAIL

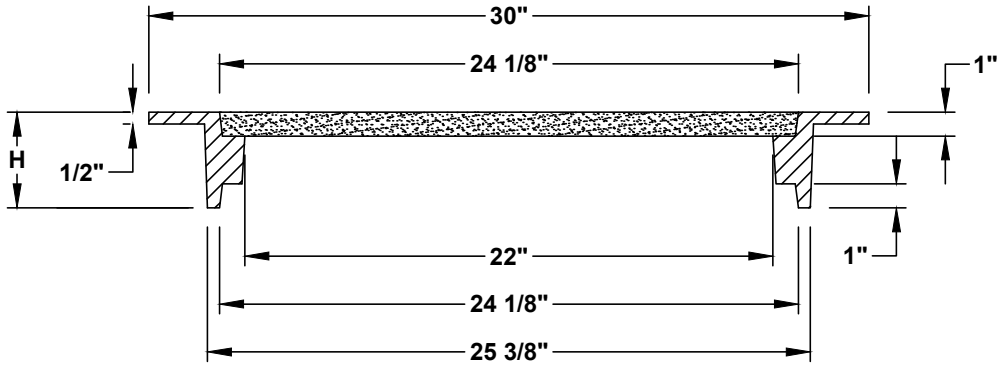
N.T.S.

SAN-09

CITY OF JOPLIN	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	PRECAST MH DETAIL
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: MHPRECAST	



PLAN
N.T.S.



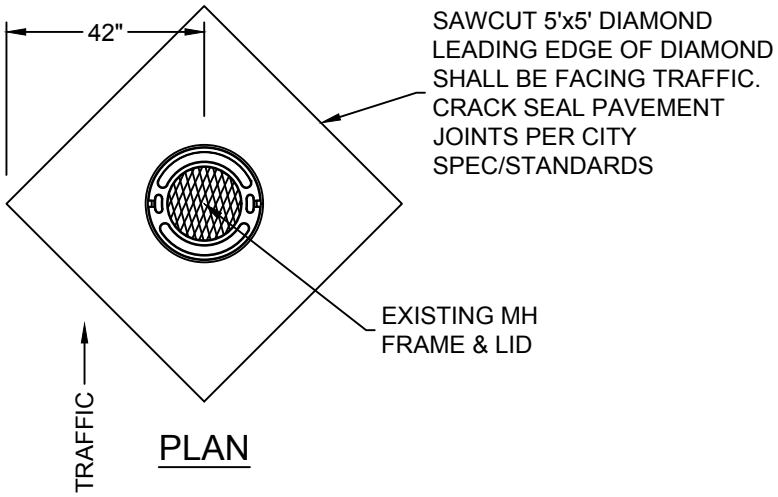
SECTION
N.T.S.

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".

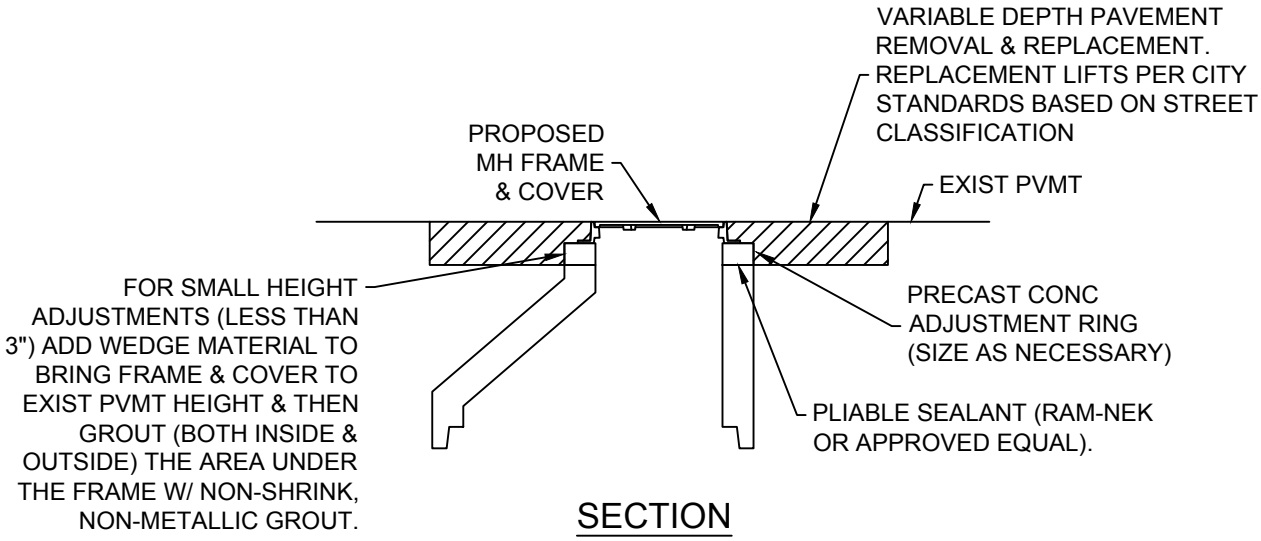
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B FINISH: NO PAINT

SAN-10

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT: STANDARD SAN SEWER MH RING & COVER
	PUBLIC WORKS DEPT	DATE: 2/2019	
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: MHLID	



PLAN



SECTION

MANHOLE FRAME & COVER REMOVAL & REPLACEMENT USING ASPHALT PAVEMENT

NTS

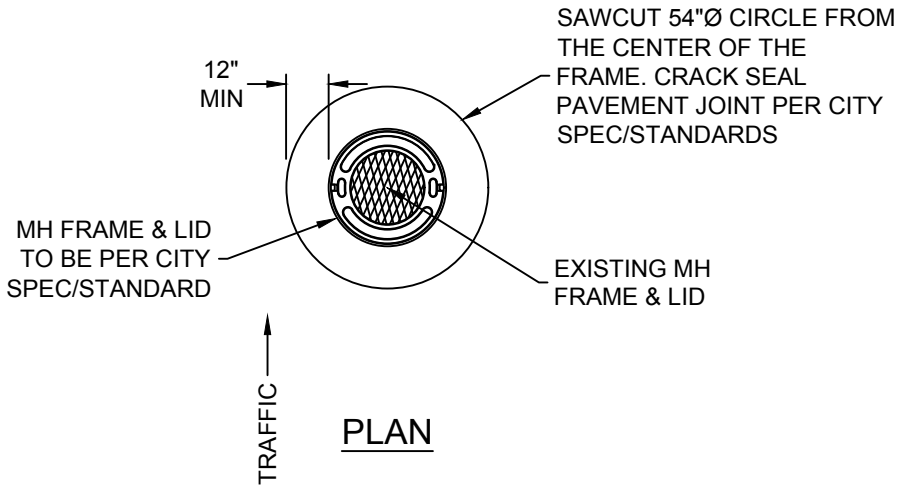
GENERAL NOTES:

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 MANHOLES 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.

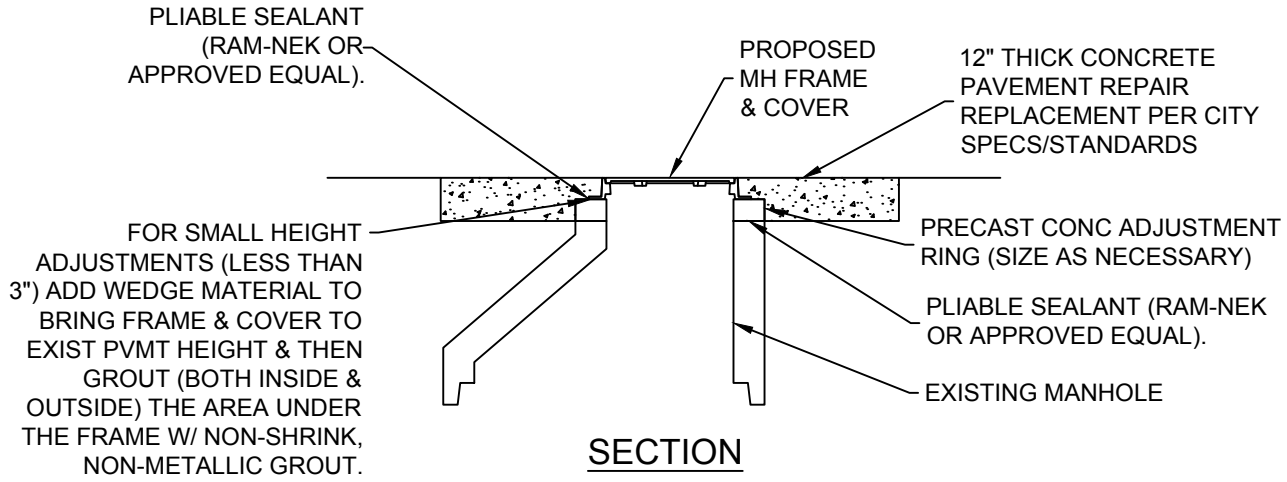
METHOD #1

SAN-12

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	MH COVER REMOVAL & REPLACEMENT #1
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: MH RIM REPAIR 2.1	



PLAN



SECTION

MANHOLE FRAME & COVER REMOVAL & REPLACEMENT USING CONCRETE PAVEMENT

NTS

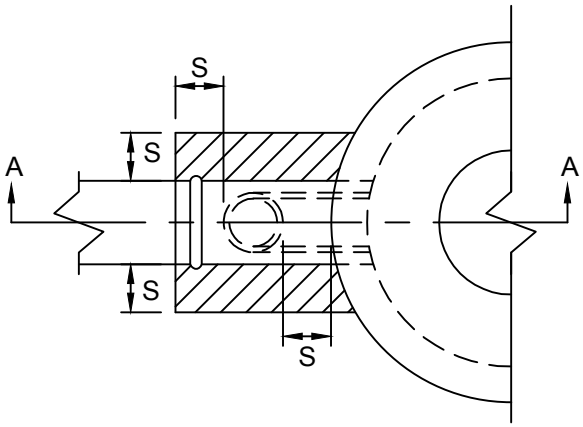
GENERAL NOTES:

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

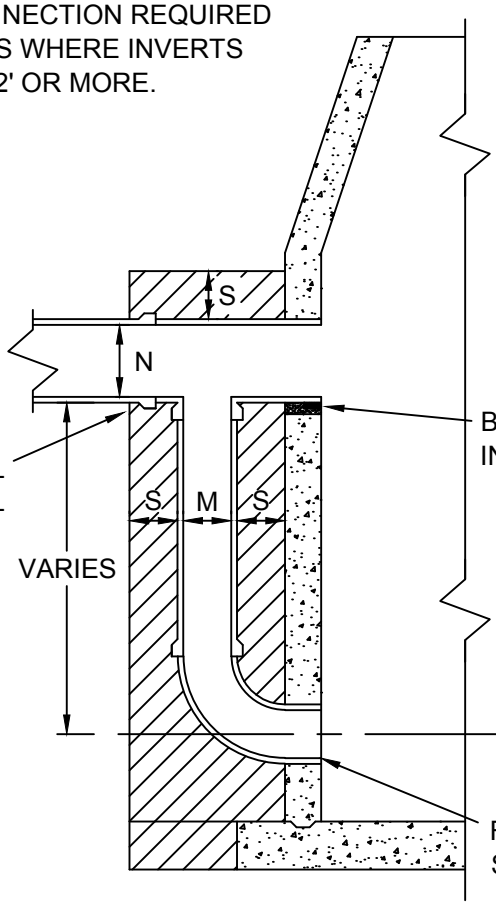
SAN-13

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	MH COVER REMOVAL & REPLACEMENT #2
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: MH RIM REPAIR 3.1	



TOP VIEW
N.T.S.

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

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

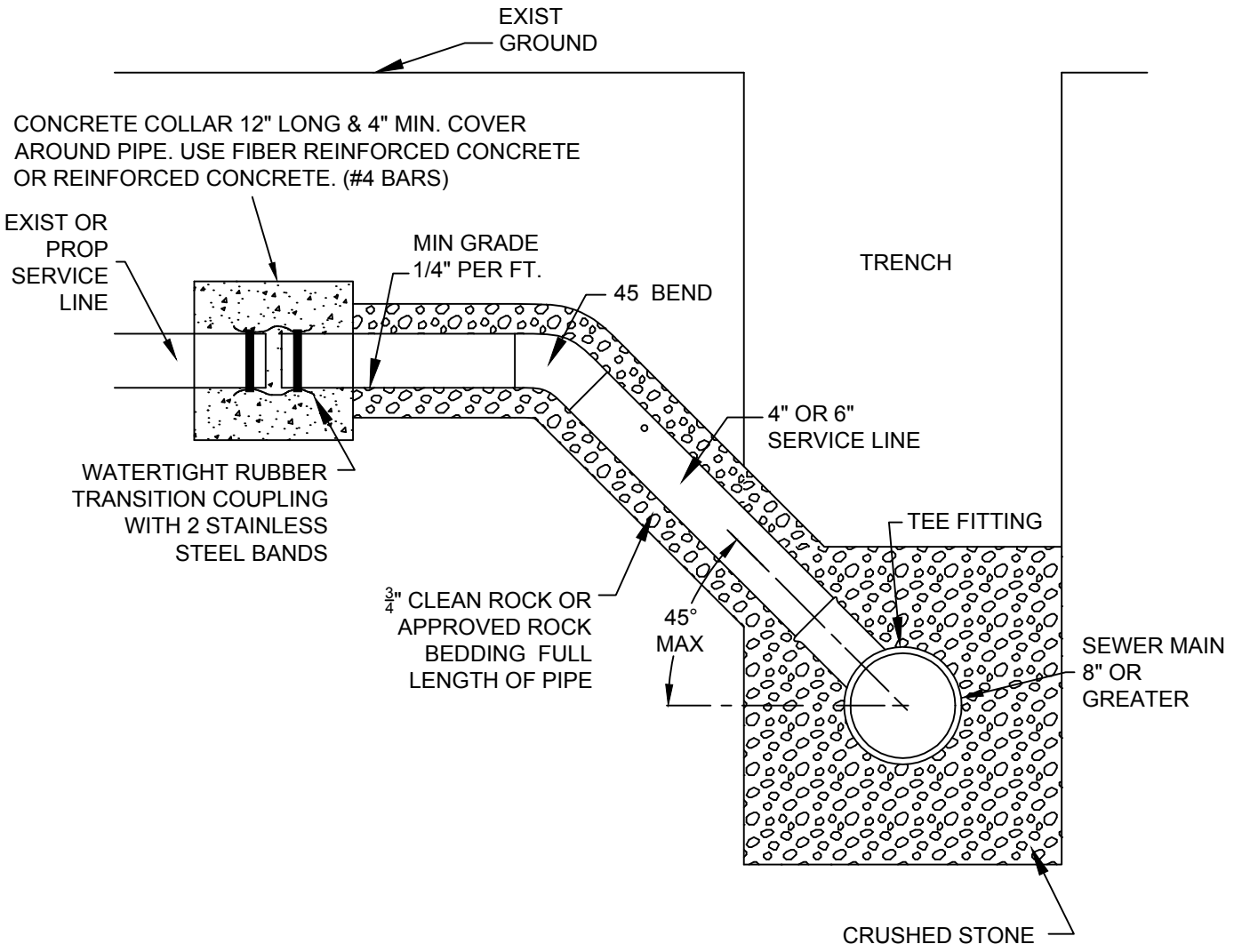
SECTION A-A
N.T.S.

OUTSIDE DROP MH CONNECTION

N.T.S.

SAN-14

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	OUTSIDE DROP MH CONNECTION
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: OUTSIDE DROP MH	



NOTES:

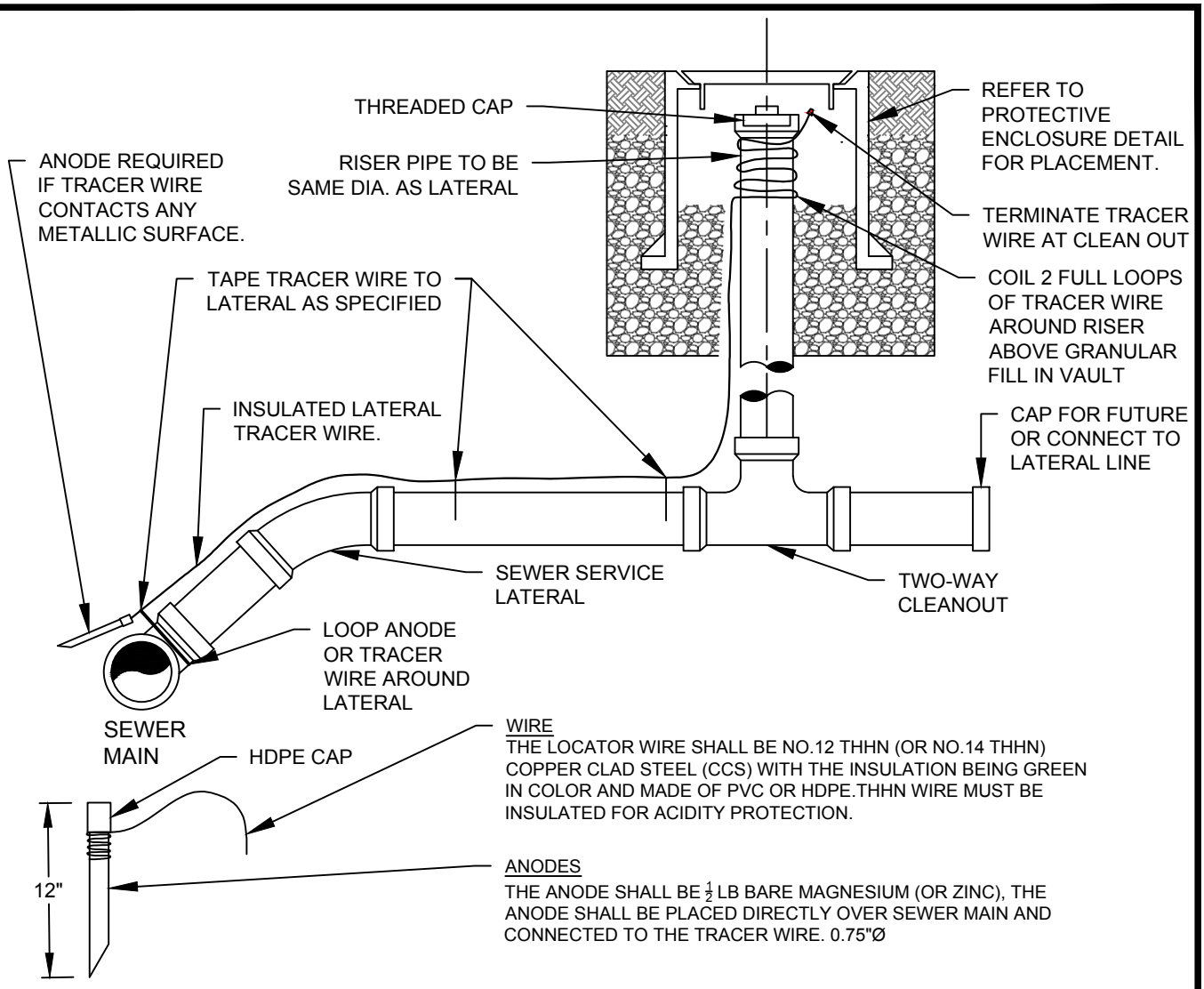
- TRACER WIRE (NOT SHOWN) MAY BE REQUIRED. SEE STANDARD DETAILS.
- RUBBER SADDLES ARE NOT ALLOWED.
- NO HOLES FOR NEW CONNECTIONS SHALL BE MADE BY HAMMERING, REGARDLESS OF THE EXISTING SEWER MAIN PIPE MATERIAL.
- ALL HOLES FOR NEW CONNECTIONS TO EXISTING PIPE SHALL BE MADE BY CORING IN THE PRESENCE OF 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.

SAN-15

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT SEWER SERVICE CONNECTION
	PUBLIC WORKS DEPT	DATE: 4/2019	
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: SERVCONN	



WIRE

THE LOCATOR WIRE SHALL BE NO.12 THHN (OR NO.14 THHN) COPPER CLAD STEEL (CCS) WITH THE INSULATION BEING GREEN IN COLOR AND MADE OF PVC OR HDPE.THHN WIRE MUST BE INSULATED FOR ACIDITY PROTECTION.

ANODES

THE ANODE SHALL BE $\frac{1}{2}$ LB BARE MAGNESIUM (OR ZINC), THE ANODE SHALL BE PLACED DIRECTLY OVER SEWER MAIN AND CONNECTED TO THE TRACER WIRE. 0.75"Ø

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

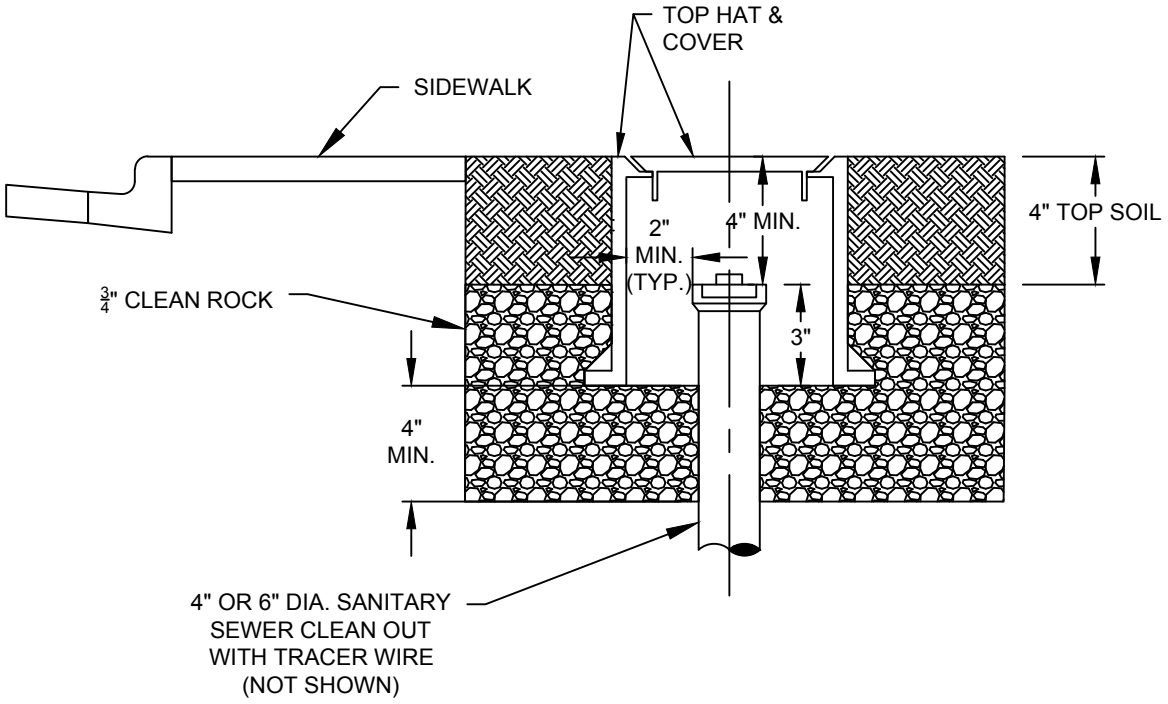
CORROSION PROOF WIRE CONNECTORS SHALL BE USED AT SPLICE LOCATIONS. ELECTRICAL TAPE SHALL BE USED AND NO BARE WIRE SHALL BE EXPOSED. CONDUCTIVITY TO BE TESTED BEFORE ACCEPTANCE.

TRACER WIRE DETAIL

NTS

SAN-16

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



NOTES

1. A SEALED CLEAN OUT WITH REMOVABLE CAP SHALL BE INSTALLED WITHIN 3' OF THE PUBLIC EASEMENT, OR PROPERTY LINE UNLESS OTHERWISE APPROVED BY THE ENGINEER, AND SHALL BE HOUSED IN A PROTECTIVE ENCLOSURE, AS PART OF THE REQUIREMENTS OF STATE STATUTE NO.319.033. THIS PROTECTIVE ENCLOSURE SHALL BE THE ACCESS POINT FOR THE SERVICE LINE CLEAN OUT AS WELL AS THE ACCESS POINT FOR CONNECTION TO THE TRACER WIRE. THE TOP OF THE PROTECTIVE ENCLOSURE SHALL BE INSTALLED TO FINISH GRADE, AND SHALL BE ACCESSIBLE FROM THE R/W OR EASEMENT.

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.

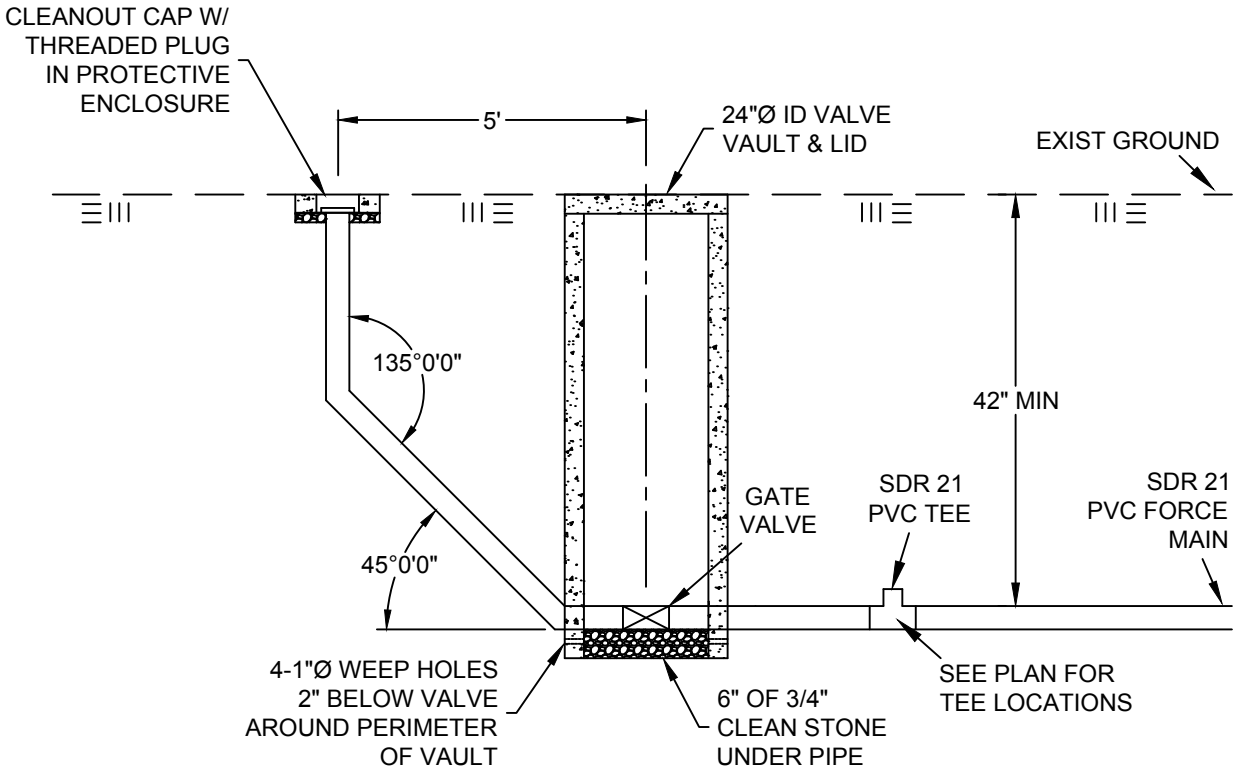
5. ALL CONNECTORS USED SHALL BE DIRECT BURIAL RATED AND SHALL BE DIELECTRIC SILICON FILLED TO SEAL OUT MOISTURE AND CORROSION.

PROTECTIVE ENCLOSURE DETAIL

NTS

SAN-17

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	PROTECTIVE ENCLOSURE FOR CLEAN OUTS
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: PROTECT ENCL	



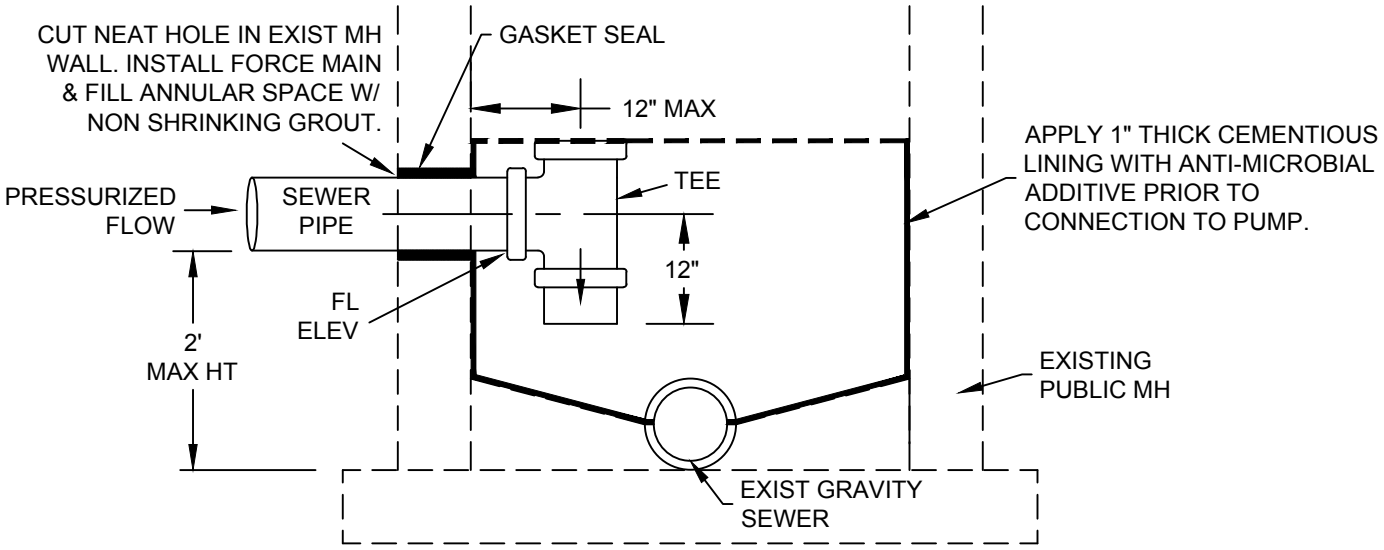
PRESSURE SEWER CLEAN OUT & RISER DETAIL

N.T.S.

NOTE: ACCEPTABLE MATERIALS FOR VALVE VAULT & LID ARE CONCRETE, GALVANIZED METAL, PVC, HDPP, & HDPE.

SAN-18

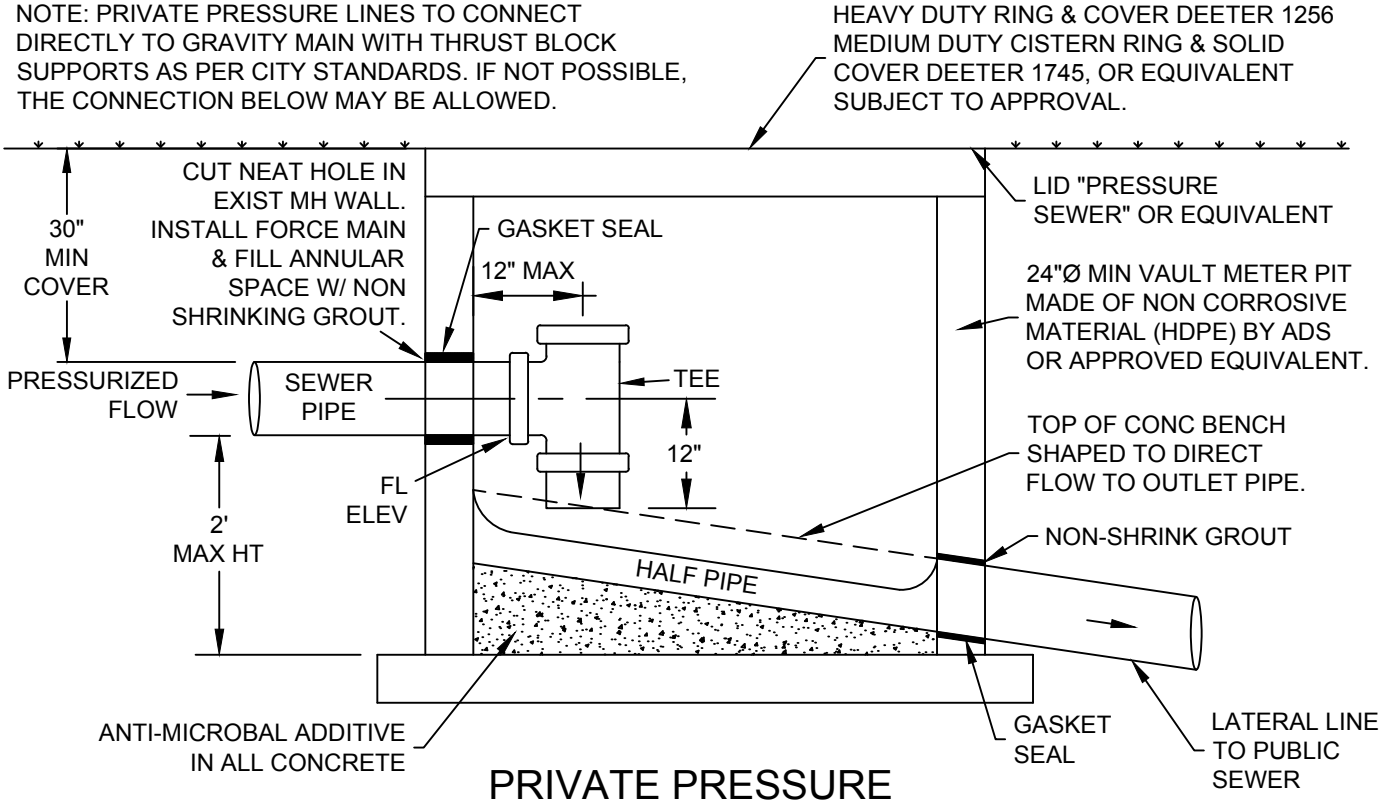
CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	PRESSURE SEWER C.O. & RISER DETAIL
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: PRESSURECO	



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.



PRIVATE PRESSURE MH CONNECTION DETAIL

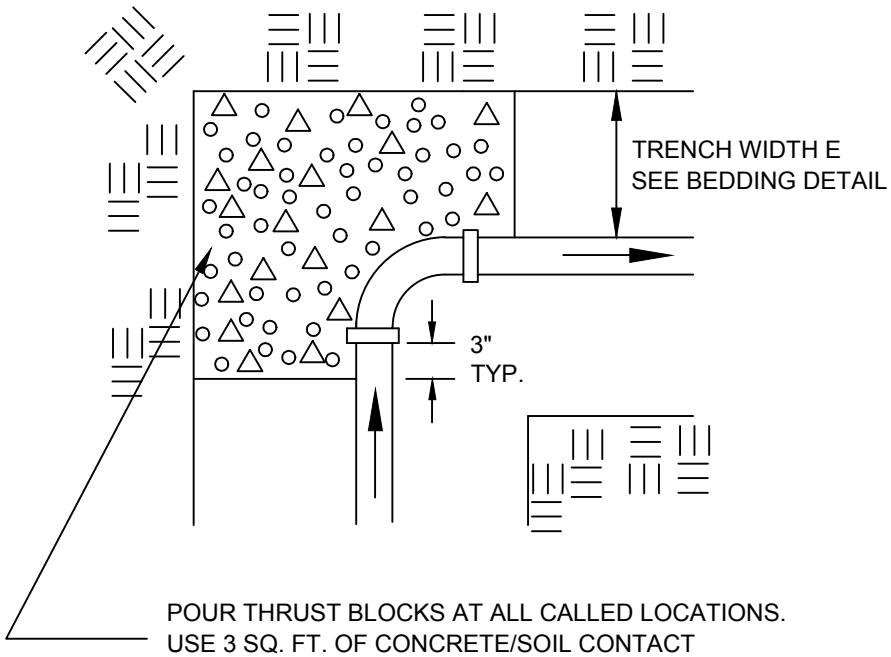
N.T.S.

SAN-19

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	PRESSURE MH DETAIL
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	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.

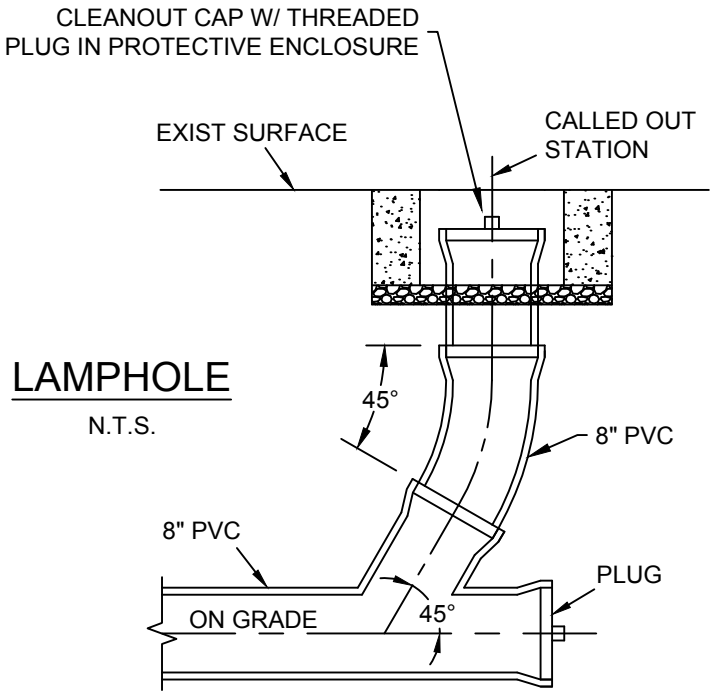


THRUST BLOCK DETAIL

N.T.S.

SAN-20

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	THRUST BLOCK DETAIL
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: THRUSTBLK	



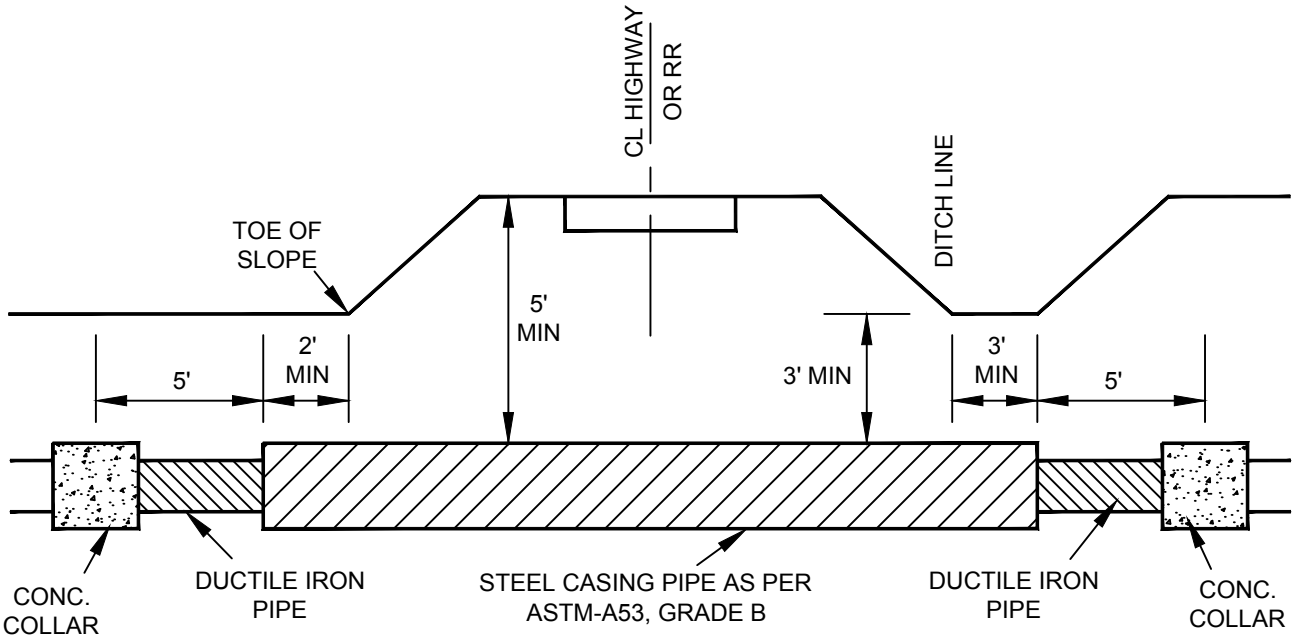
LAMPHOLE

N.T.S.

INSTALLATION ALLOWED ONLY UPON CITY ENGINEER'S APPROVAL.

SAN-21

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	SANITARY SEWER LAMPHOLE
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: LAMPHOLE	



NOTES:

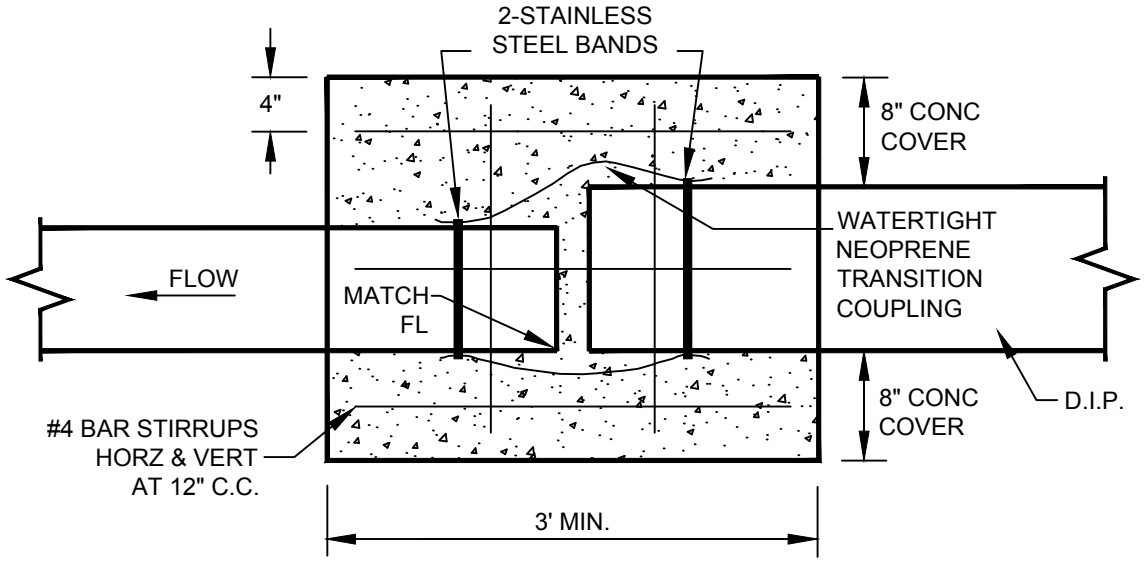
1. SEAL BOTH ENDS OF CASING PIPE W/ WATERTIGHT NEOPRENE ATTACHED WITH 2" STEEL BANDS.
2. ENDS SHALL BE SEALED TO PREVENT THE ENTRANCE OF FOREIGN MATERIAL, BUT SHALL NOT BE TIGHTLY SEALED. POURED CONC CAPS SHALL NOT BE ALLOWED.
3. UTILIZE PIPE SPACERS EVERY 3'.

TYPICAL HWY OR RR SEWER XING

N.T.S.

SAN-22

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	HIGHWAY OR RR SEWER XING DETAIL
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: HWY XING	

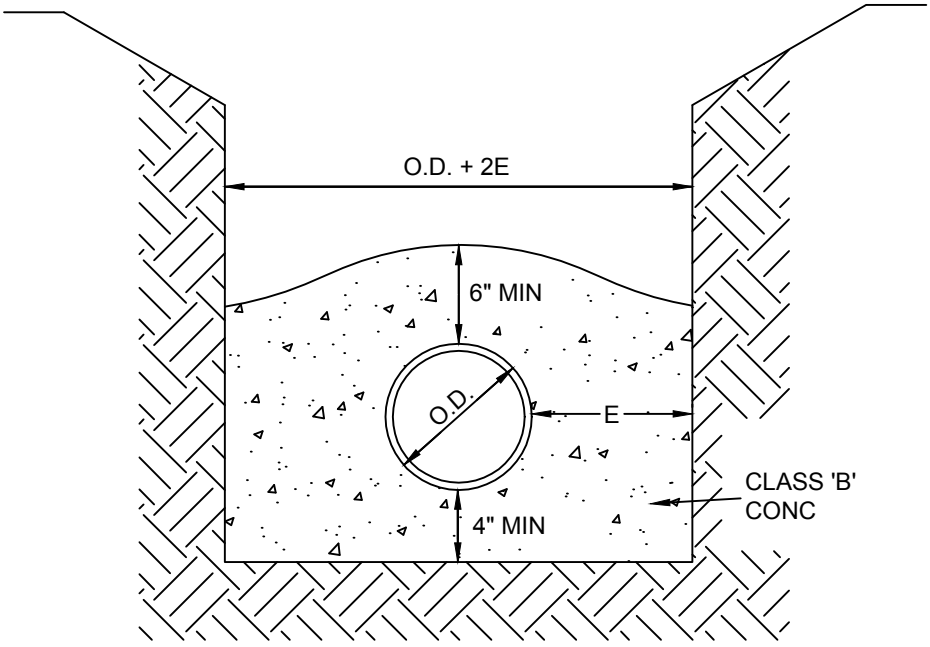


CONC COLLAR

N.T.S.

SAN-23

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	CONCRETE COLLAR
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: CONCCOLL	



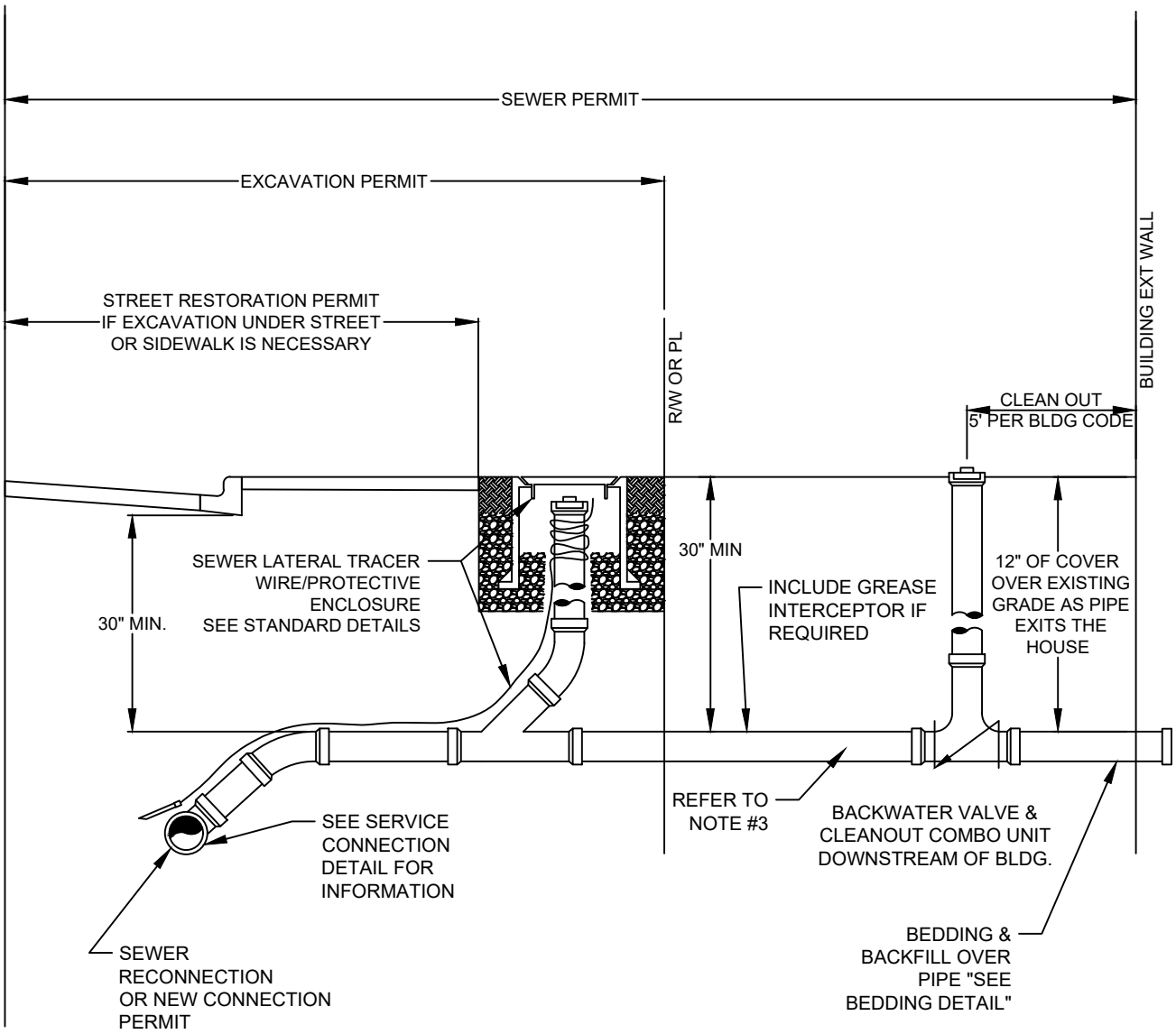
E	PIPE O.D.
12"	4" TO 24"
15"	27" TO 36"
18"	42" TO 60"

CONC ENCASEMENT

N.T.S.

SAN-24

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	SEWER PIPE CONC ENCASEMENT
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: ENCASE	



NOTE:

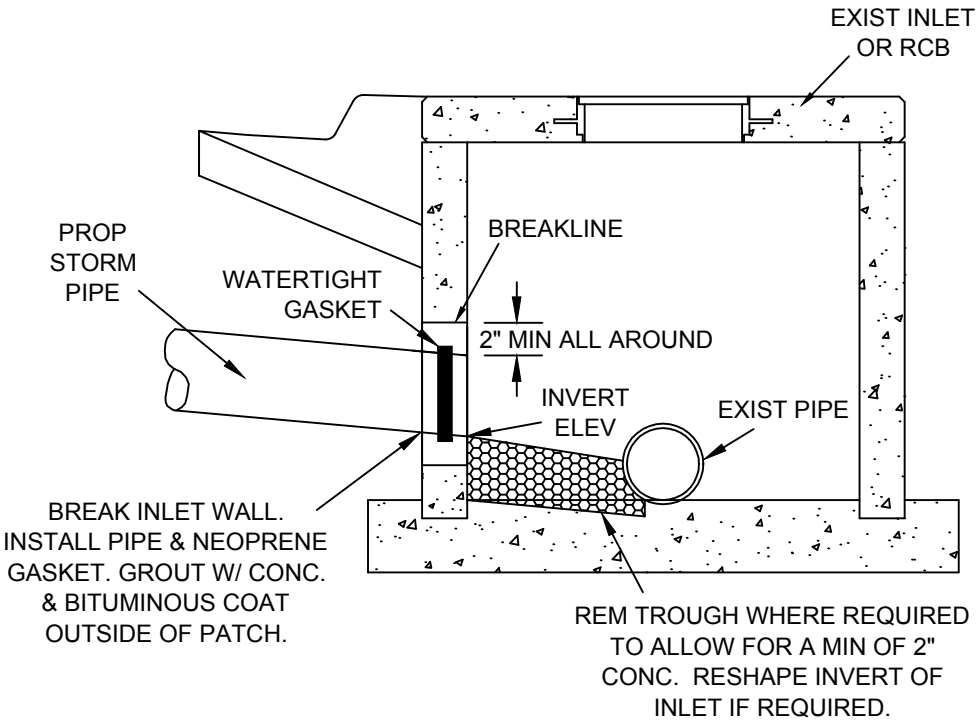
1. CLEAN OUTS SHALL BE REQUIRED FOR ALL 90° BENDS IN PIPE ALIGNMENT.
2. FOR BENDS LESS THAN 45° INSTALL CLEANOUTS PER THE GUIDELINES FOUND IN THE INTERNATIONAL PLUMBING CODE, LATEST ADOPTED VERSION.
3. WHEN GREASE INTERCEPTOR IS REQUIRED INSTALL THE BACK WATER VALVE DOWNSTREAM FROM THE GREASE INTERCEPTOR.
4. IN PRIVATE DEVELOPMENTS, IF A DEVELOPER IS INSTALLING A PRIVATE SEWER MAIN TO SERVE MULTIPLE BUILDINGS, A CLEANOUT WILL BE REQUIRED AT ALL CONNECTIONS TO THAT PRIVATE LINE.

COMMERCIAL/RESIDENTIAL PERMITS FOR SANITARY SEWER

NTS

SAN-25

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2021	COMM/RESIDENTIAL SS PERMITS
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: C/R-SS PERMITS	

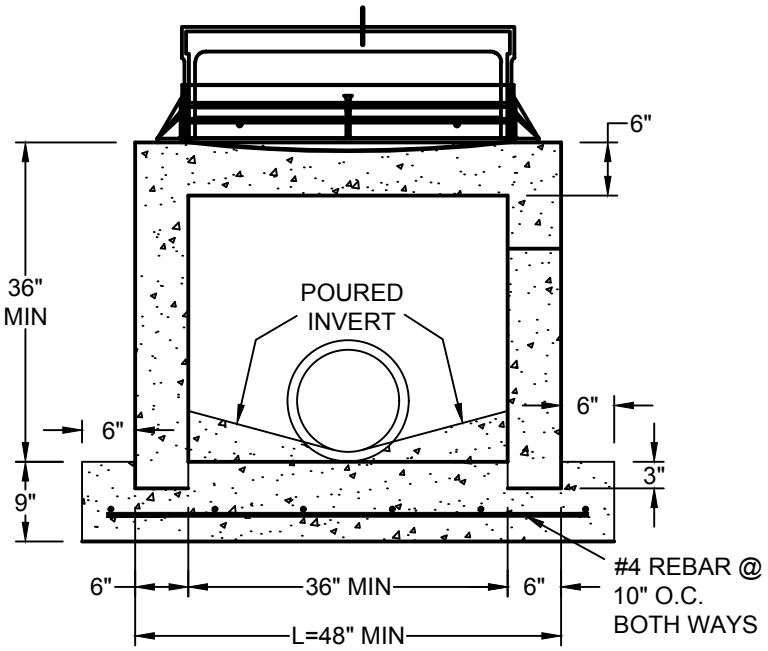


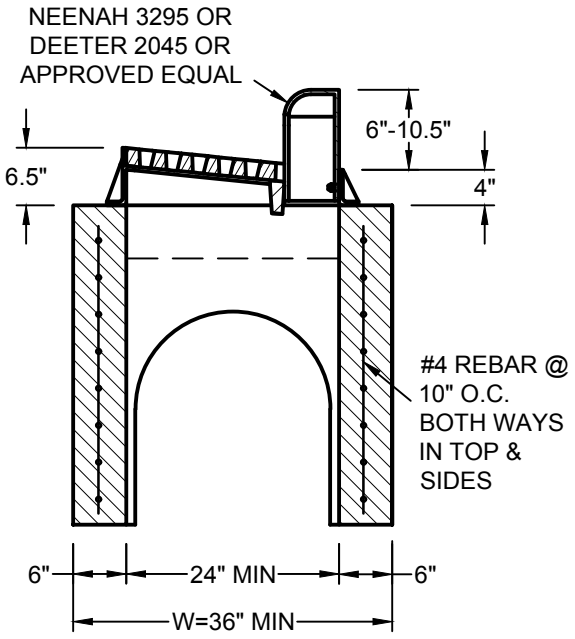
EXIST INLET OR RCB CONNECTION

N.T.S.

STM-01

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	EXIST INLET OR RCB CONNECTION
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: INLETTAP	



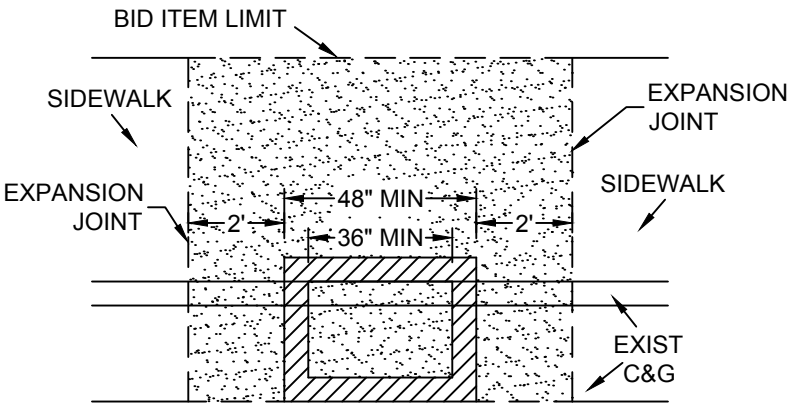


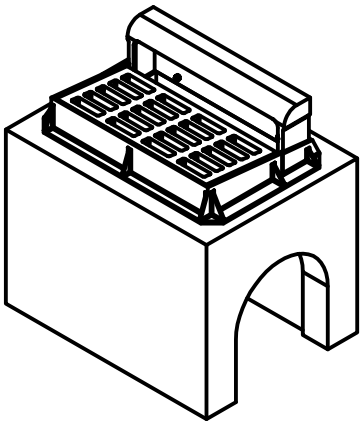
SINGLE PRE-CAST TYPE 'A' CATCH BASIN

N.T.S.
FINISH: BLACK EPOXY

NOTES:

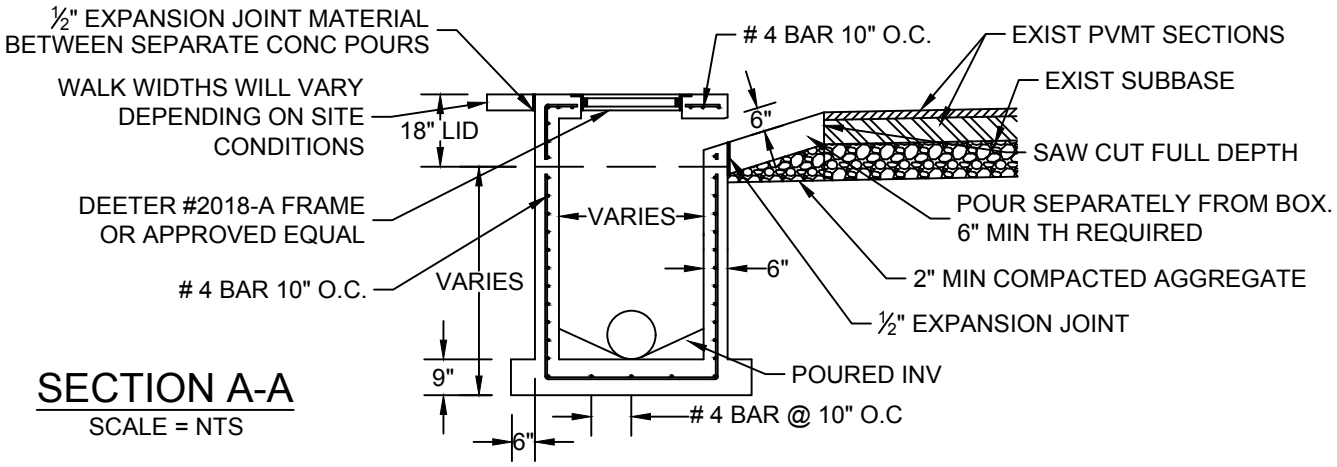
1. BOTTOM OF INLET SHALL BE 9" TH W/ #4 REBAR SPACED 10" OC BOTH WAYS.
2. FLOOR OF INLET SHALL BE SHAPED W/ INV TO PROVIDE SMOOTH FLOW.
3. STEPS ARE NOT ALLOWED.
4. BEVEL ALL EXPOSED EDGES W/ 3/4" CHAMFER OR 1/2" TOOLED EDGE.
5. THE SUM OF "L" & "W" SHALL NOT EXCEED 14' WITHOUT SPECIAL DESIGN.
6. ALL 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.





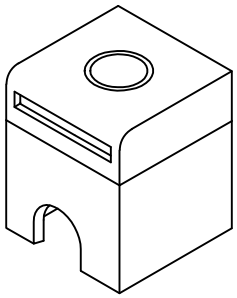
STM-02

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	TYPE 'A' CATCH BASIN
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: TYPEACATCHBASIN	



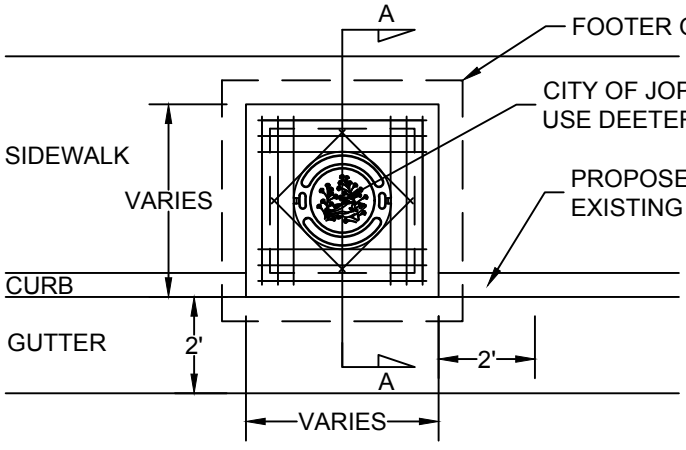
SECTION A-A
SCALE = NTS

TYPE 'C' CURB INLET
N.T.S.



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.



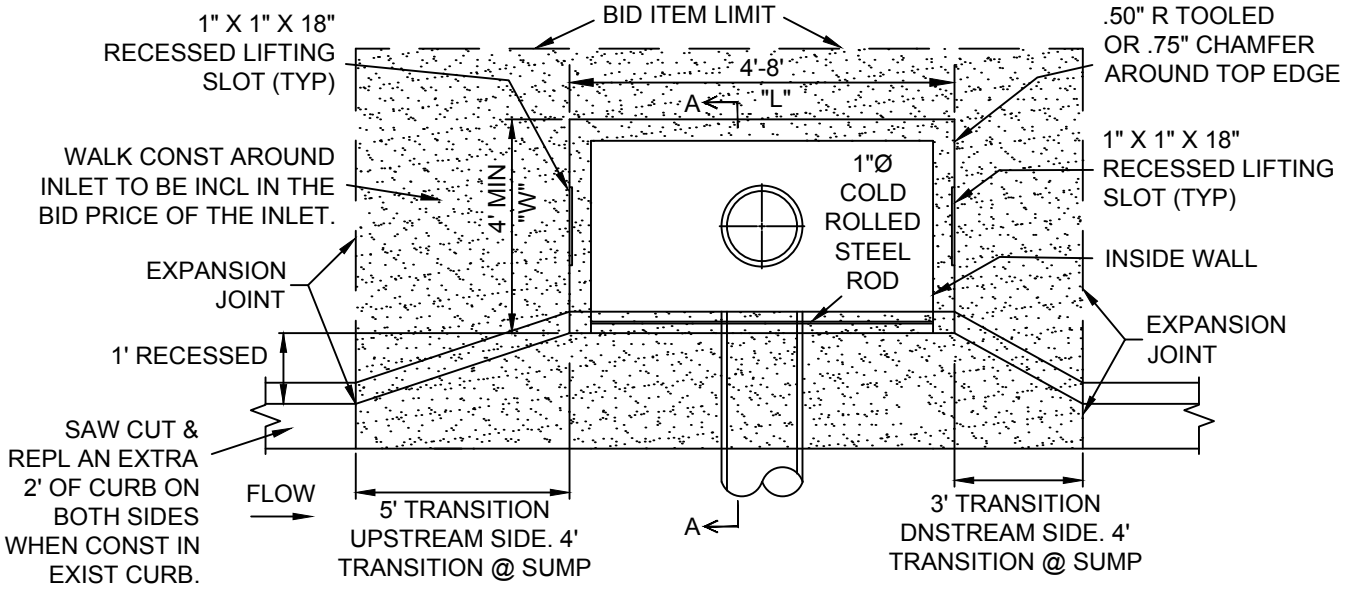
PLAN VIEW
SCALE = NTS

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.

STM-03

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT: TYPE 'C' CURB INLET
	PUBLIC WORKS DEPT	DATE: 2/2019	
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: TYPECCB	

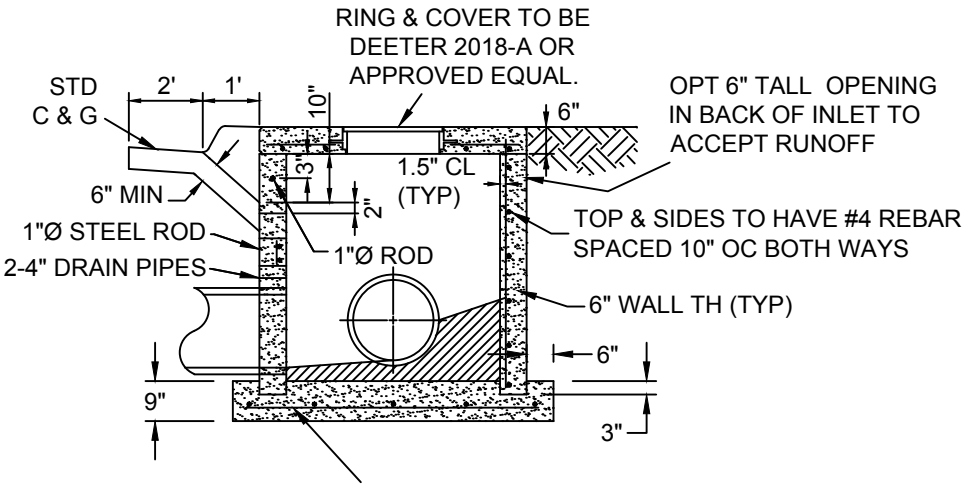


PLAN SINGLE CURB INLET - TYPE 'D'

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.

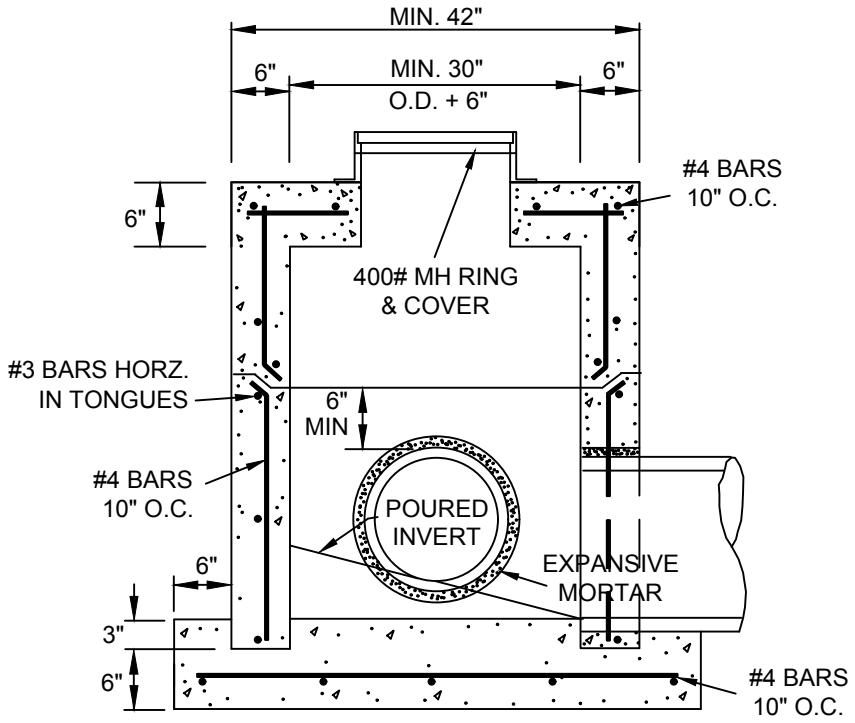


TYPE 'D' INLET SECTION A-A

(PRECAST) N.T.S.

STM-04

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT: TYPE 'D' CATCH BASIN
	PUBLIC WORKS DEPT	DATE: 2/2019	
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: TYPEDCB	



CONC JNCT BOX W/ MH RING & COVER

N.T.S.

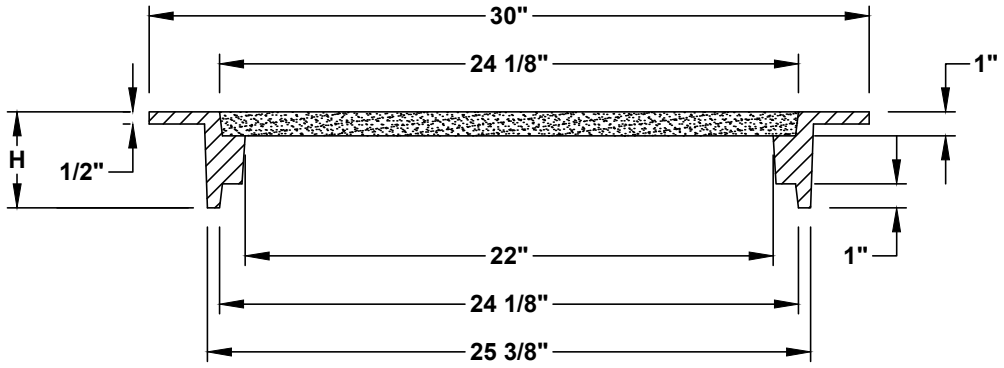
STM-05

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	CONC JUNCTION BOX W/ MH RING & COVER
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: MHBOX	



PLAN
N.T.S.

NOTE:
THIS LID IS FOR INSTALLATIONS BEHIND STREET CURBS.
FOR INSTALLATIONS SUBJECT TO TRAFFIC LOADS IN
PUBLIC ROADS, USE STANDARD SANITARY SEWER MH LID.



SECTION
N.T.S.

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".

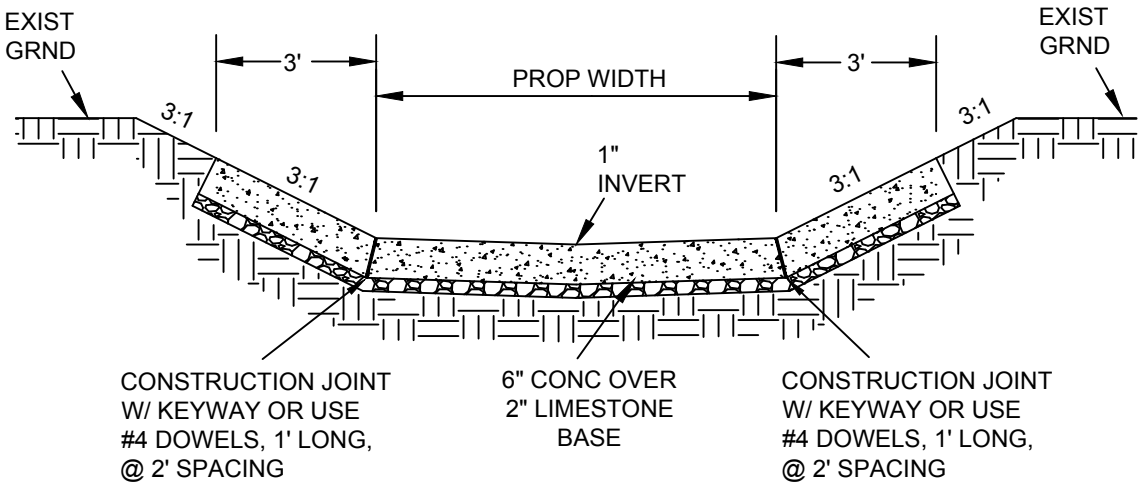
MATERIAL: CAST GRAY IRON ASTM A-48,
CLASS 35B FINISH: NO PAINT

STM-06

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	STANDARD STORM SEWER RING & COVER
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: STM LID	

TYPICAL SECTION

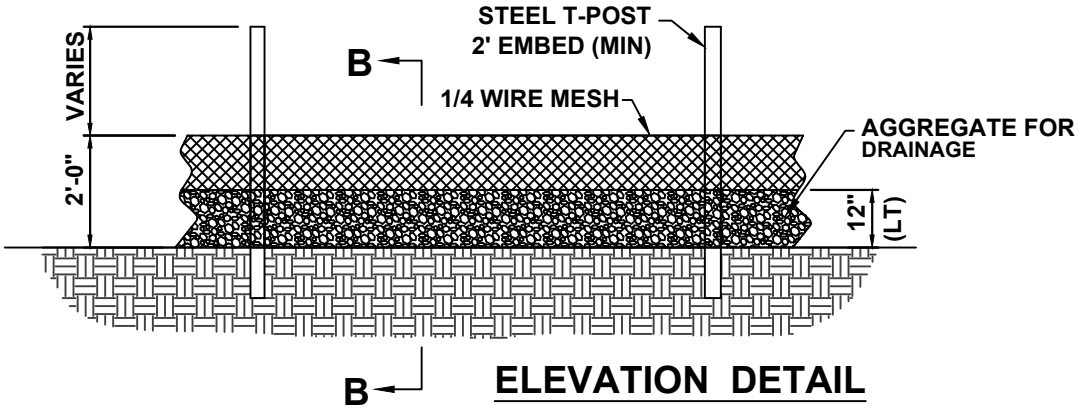
NTS



CONSTRUCT 6" X 18" CONCRETE TOE WALL
AT START & END OF DITCH & ALSO EVERY 100'

STM-07

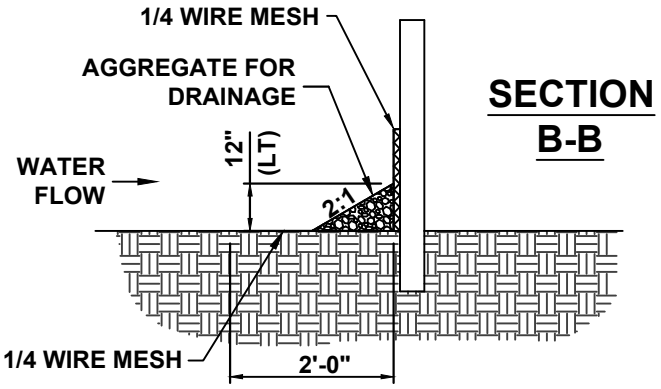
CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	**CONC DITCH W/ INVERT**
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: CONCDITCH	



ELEVATION DETAIL

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.

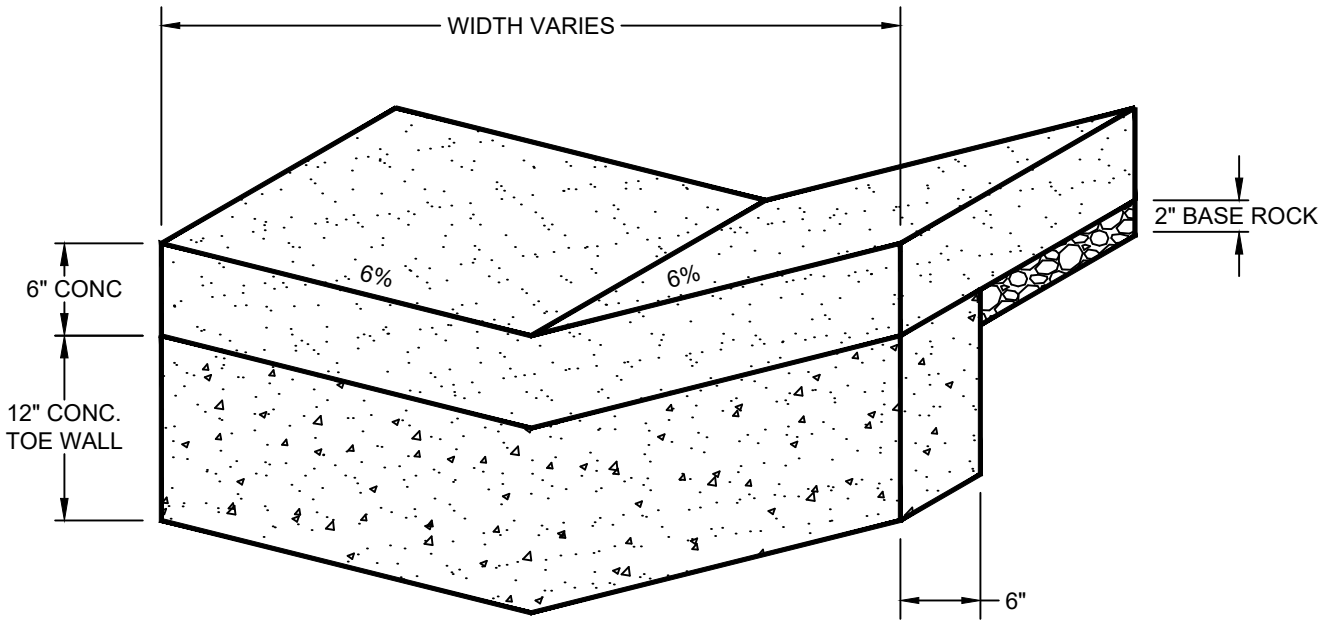


SECTION B-B

ROCK/MESH SEDIMENT CONTROL FENCE

STM-08

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	ROCK/MESH SEDIMENT CONTROL FENCE
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: SEDIMENTFENCE	



TRICKLE CHANNEL

NTS

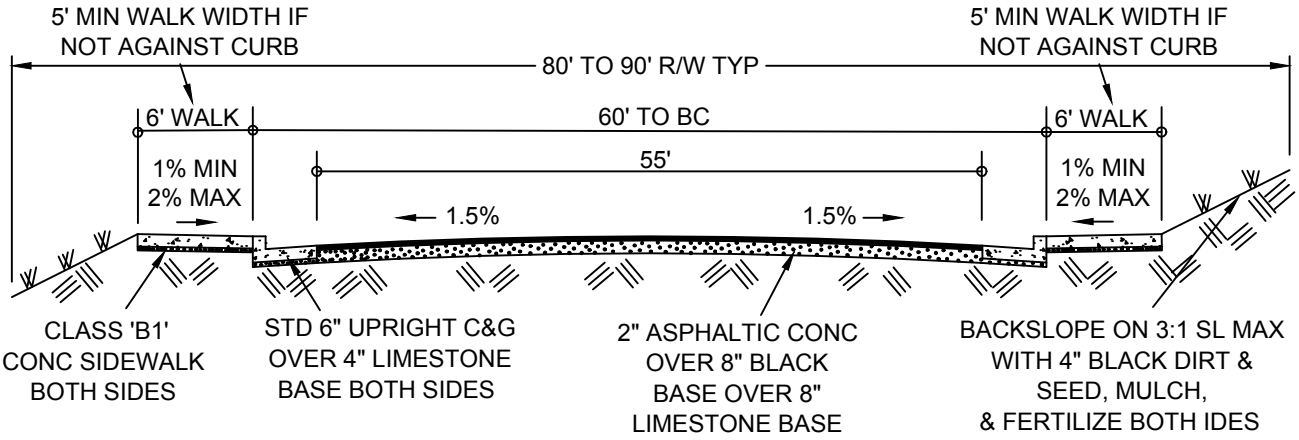
NOTES:
1. CONSTRUCT CONTRACTION JOINTS EVERY 12.5' MAXIMUM.
2. USE CLASS 'B' CONCRETE.
3. CONSTRUCT EXPANSION JOINTS EVERY 50' MAXIMUM.

STM-09

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 10/2020	CONC. TRICKLE CHANNEL DETAIL
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: TRICKLE CHANNEL	

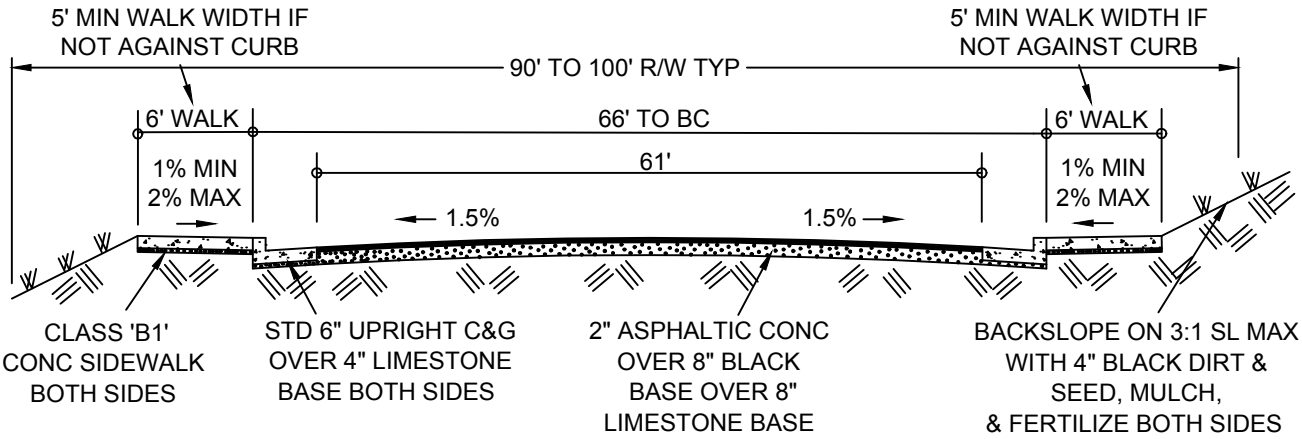
TYPICAL SECTION
5 LANE ARTERIAL W/ NO BIKE LANES

N.T.S.



TYPICAL SECTION
5 LANE ARTERIAL W/ BIKE LANES

N.T.S.

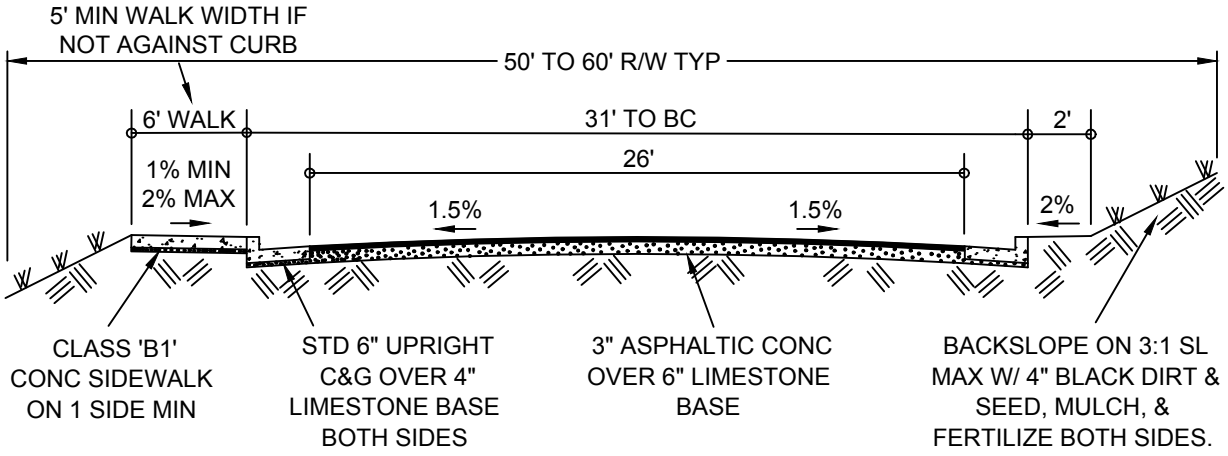


ST-01

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 10/2020	TYPICAL SECTIONS ARTERIAL STREETS
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: ARTERIALTYP2	

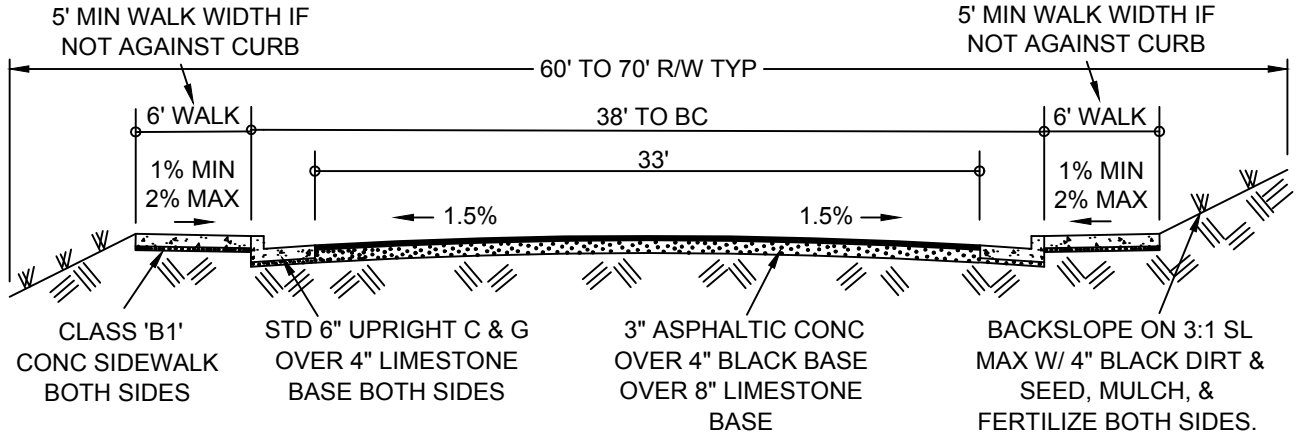
TYPICAL SECTION
2 LANE W/ NO BIKE LANES

N.T.S.



TYPICAL SECTION
3 LANE COLLECTOR W/ NO BIKE LANES

N.T.S.

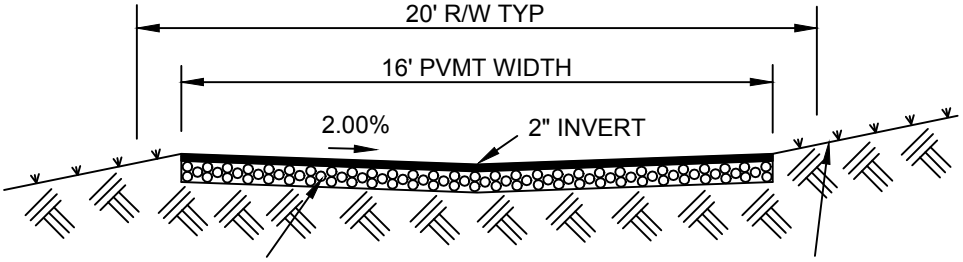


ST-02

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 10/2020	TYPICAL SECTIONS 2 & 3 LANE STREETS
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: ARTERIALTYP1	

TYPICAL SECTION

N.T.S.



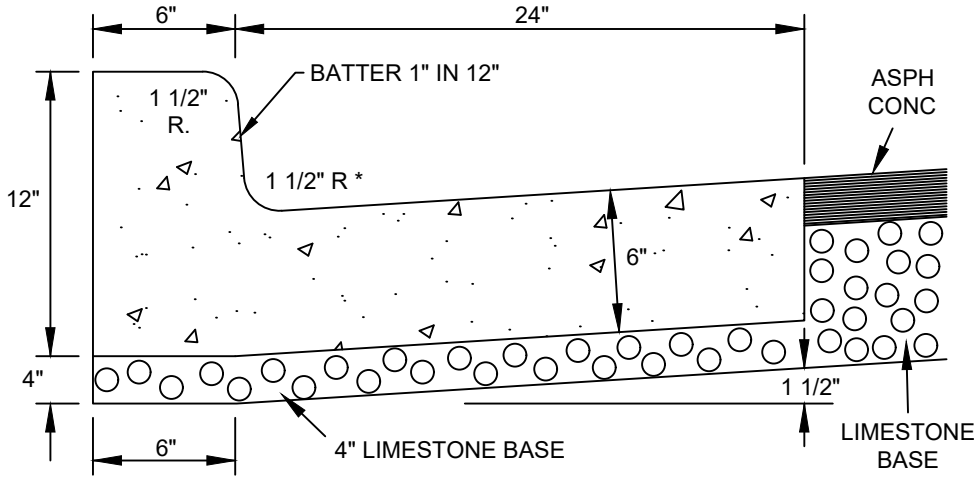
2" ASPHALTIC CONC
OVER 6" LIMESTONE
BASE

BACKSLOPE ON 3:1 SL MAX W/ 4"
BLACK DIRT & SEED, MULCH, &
FERTILIZE BOTH SIDES.

ST-03

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT TYPICAL SECTION RESIDENTIAL ALLEY
	PUBLIC WORKS DEPT	DATE: 10/2020	
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: ALLEYTYP	

* = OPTIONAL WITH APPROVAL BY CITY ENGINEER.



NOTES:

1. CONSTRUCT EXPANSION JOINTS AT THE START & END OF EVERY DRIVEWAY & CURB INLET.
2. CONSTRUCT CONTRACTION JOINTS EVERY 12.5' MAXIMUM.
3. JOINT MATERIAL TO EXTEND THRU C & G, FRONT TO BACK, & NEATLY TRIMMED TO MATCH C0NC SURFACE.
4. FLOAT GROUT TO SURFACE ON EXPOSED SURFACES.
5. ALL POURED CONCRETE SHALL BE CLASS 'B'.

STD UPRIGHT C & G

N.T.S.

ST-04

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 12/2020	STD UPRIGHT CURB & GUTTER
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: CURBDET	

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".

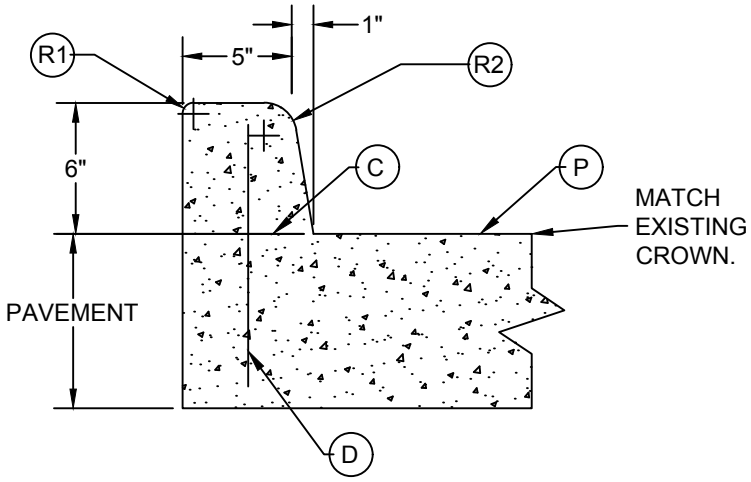
Ⓟ TOP OF PAVEMENT OR CONCRETE BASE.

Ⓡ1 ROUND TO 1/2" RADIUS. (EXCEPT FOR SAWED JOINTS)

Ⓡ2 ROUND TO 1 1/2" RADIUS.

TYPE A INTEGRAL CURB

NOT TO SCALE

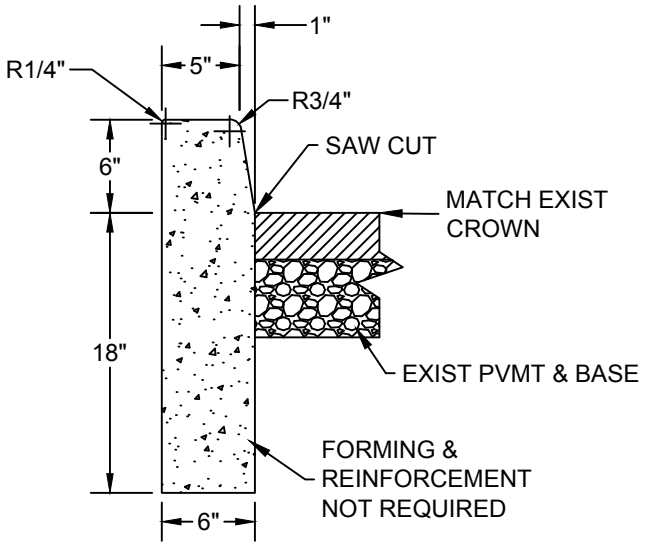


NOTES:

1. ALL POURED 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.

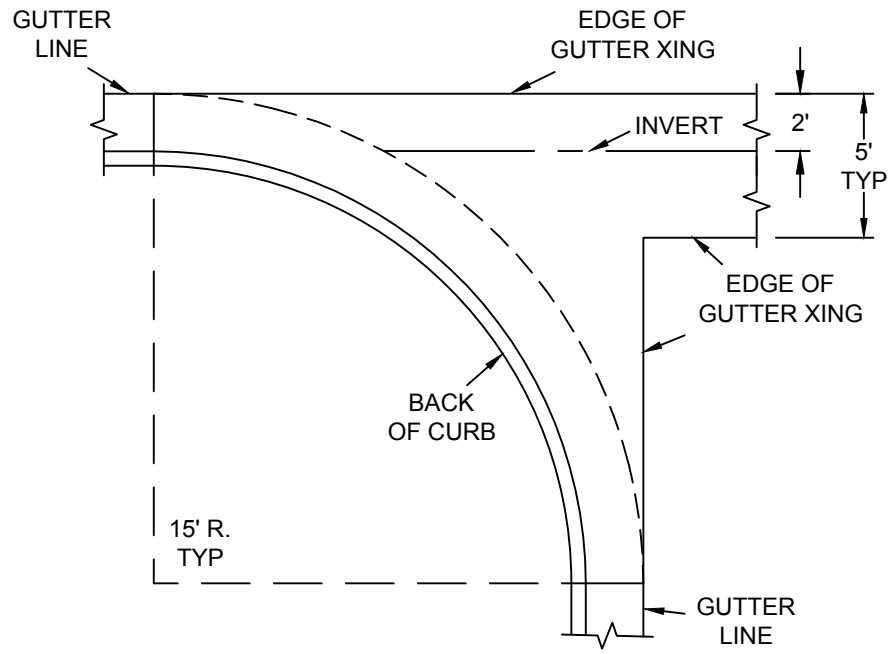
TYPE S CONCRETE CURB

NOT TO SCALE



ST-05

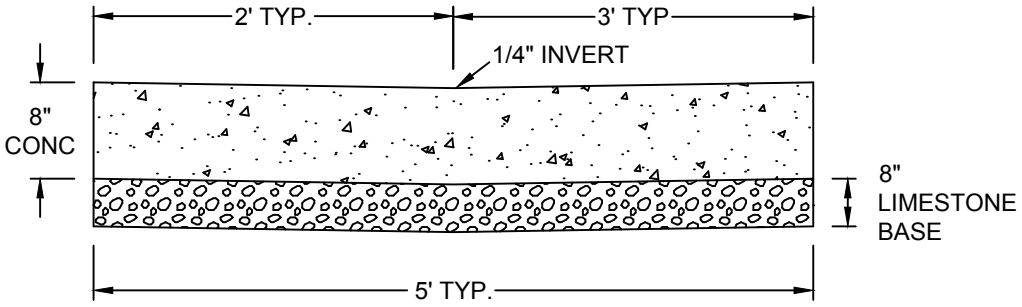
CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	TYPE "A" & TYPE "S" CURB
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: TYPEA&SCURB	



PLAN

N.T.S.

NOTE : USE 1/2" INVERT WITH A 10' GUTTER XING.



SECTION THRU CL

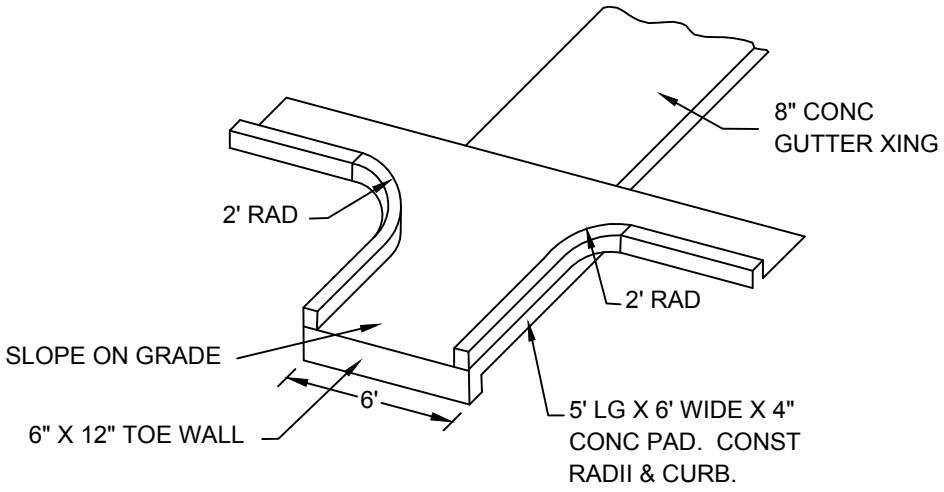
N.T.S.

NOTES:

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.

ST-06

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 10/2020	CONC
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	GUTTER XING
	602 S MAIN ST 64801	FILE: GUTTERXING	



FLUME DETAIL

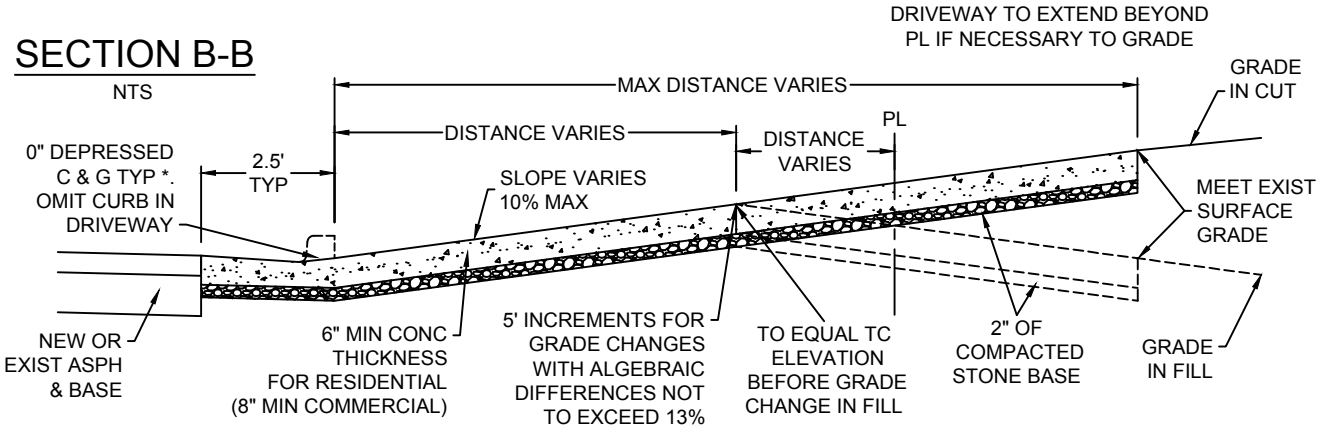
N.T.S.

ST-07

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 2/2019	CONCRETE FLUME
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: FLUMEDET	

SECTION B-B

NTS

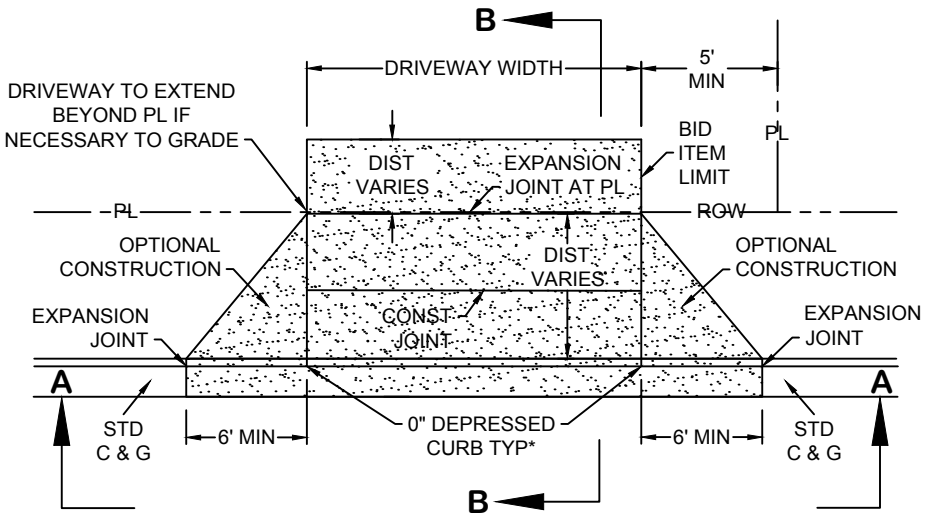


NOTES:

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.

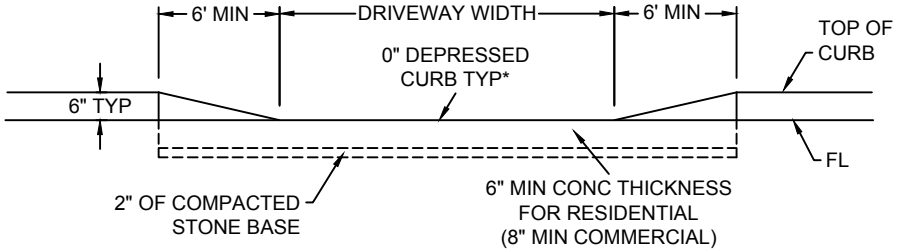
PLAN VIEW

NTS



SECTION A-A

NTS



ST-08

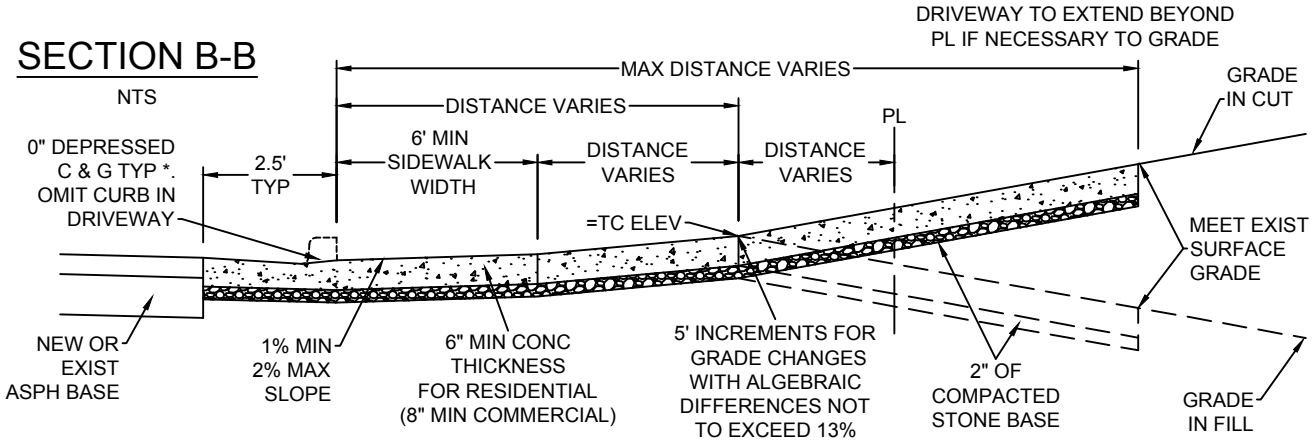
CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY:	JOHNSON
	PUBLIC WORKS DEPT	DATE:	2/2019
	ENGINEERING DIVISION	ENGINEER:	HERTZBERG
	602 S MAIN ST 64801	FILE:	TYPEADRIVE

PROJECT

TYPE A DRIVEWAY WITH NO SIDEWALK

SECTION B-B

NTS

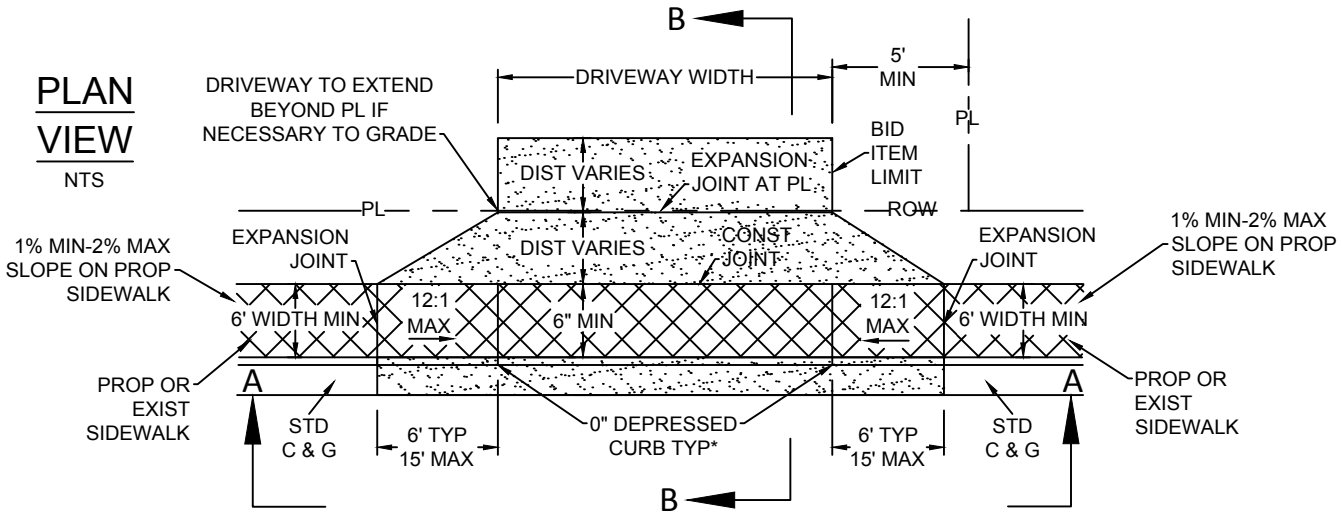


NOTES:

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.

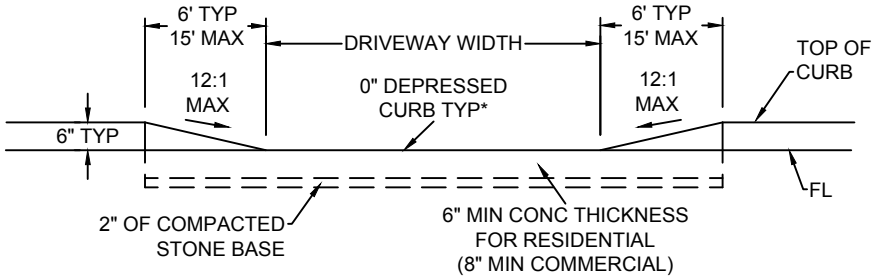
PLAN VIEW

NTS



SECTION A-A

NTS



ST-09

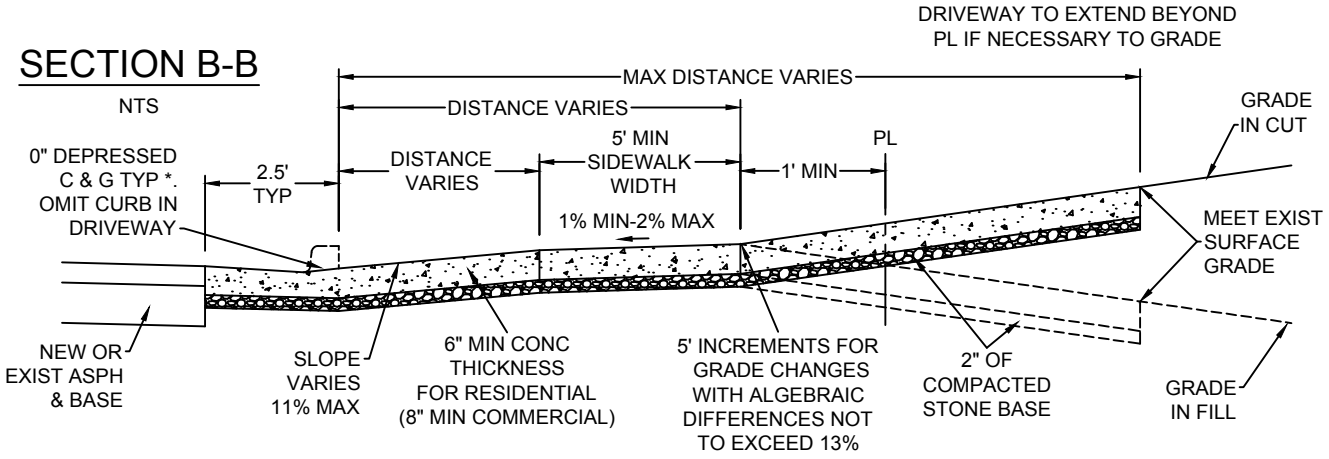
CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY:	JOHNSON
	PUBLIC WORKS DEPT	DATE:	2/2019
	ENGINEERING DIVISION	ENGINEER:	HERTZBERG
	602 S MAIN ST 64801	FILE:	TYPEBDRIVE

PROJECT

TYPE B DRIVEWAY WITH SIDEWALK AGAINST CURB

SECTION B-B

NTS

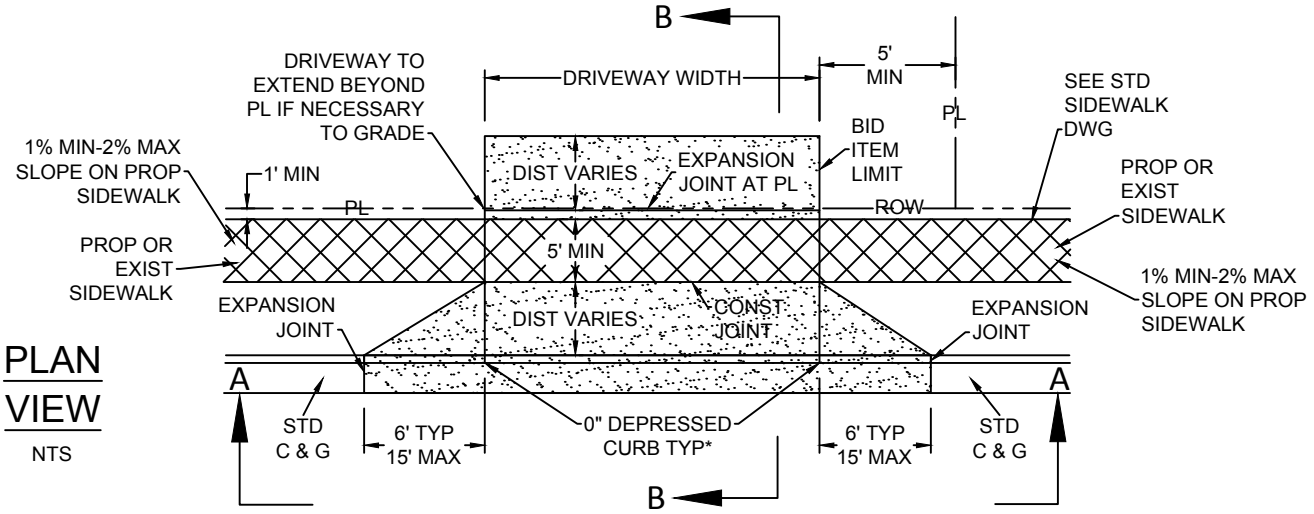


NOTES:

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' X5' LANDING.

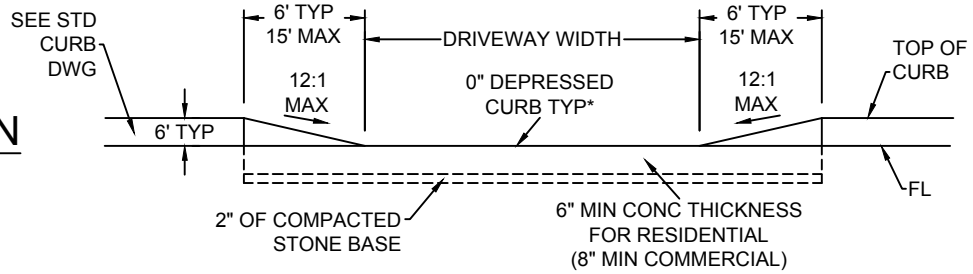
PLAN VIEW

NTS



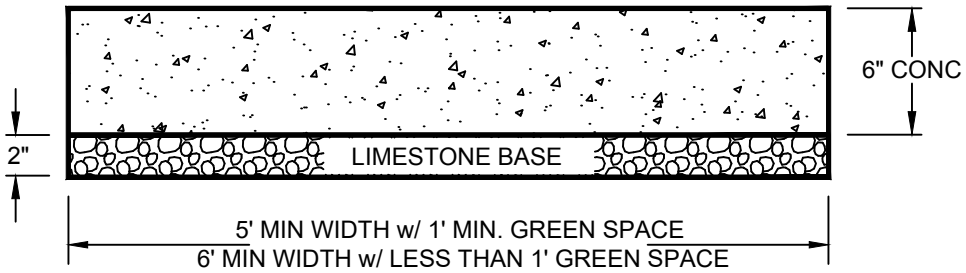
SECTION A-A

NTS



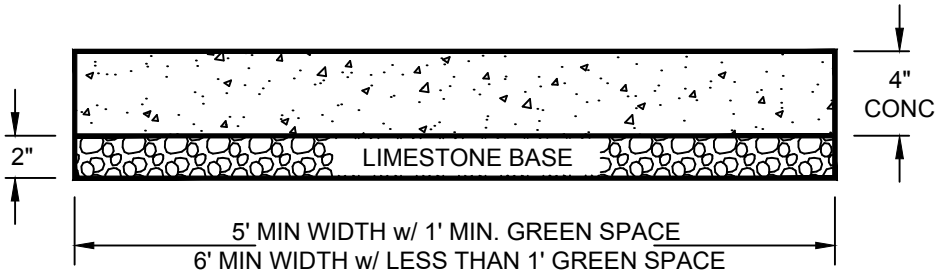
ST-10

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT: TYPE C DRIVEWAY WITH SIDEWALK OFFSET FROM CURB
	PUBLIC WORKS DEPT	DATE: 2/2019	
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: TYPECDRIVE	



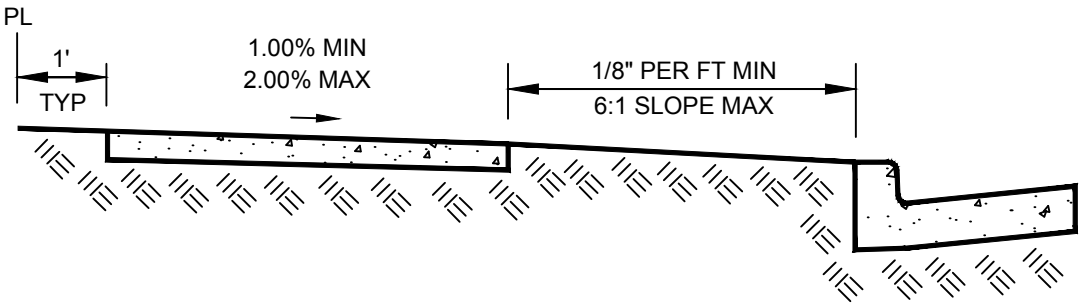
CLASS 'A' CONC SIDEWALK

NTS



CLASS 'B' CONC SIDEWALK

NTS



NOTES:

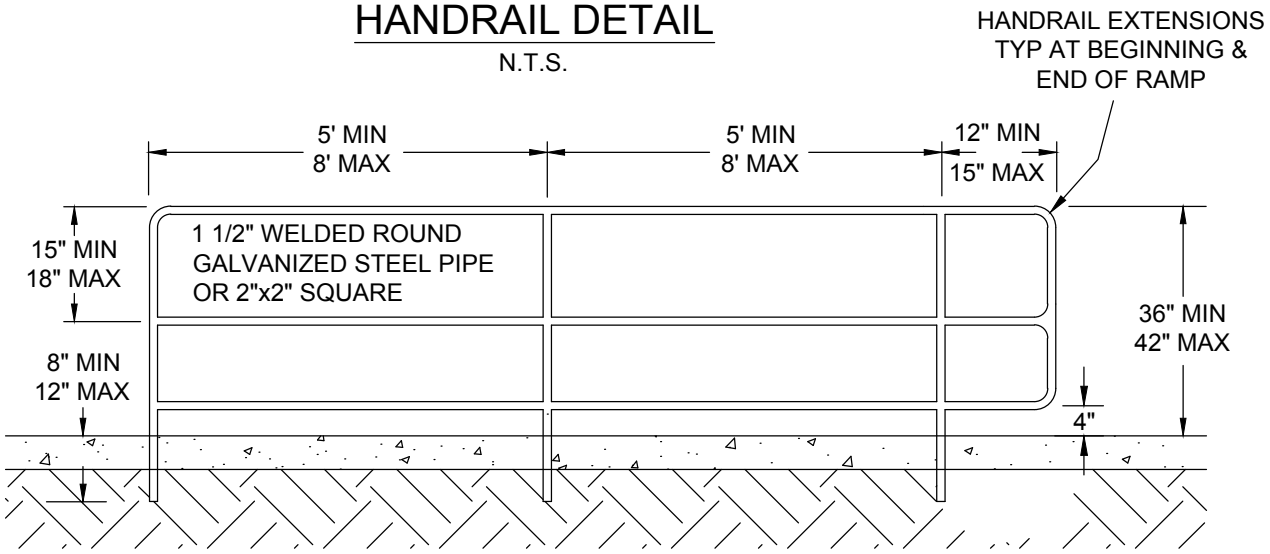
1. CONSTRUCT EXPANSION JOINTS AT CURB INLETS.
2. CONSTRUCT CONTRACTION JOINTS EVERY 10' MAXIMUM.
3. USE CLASS 'B1' CONCRETE.
4. REINFORCEMENT IS OPTIONAL.
5. CROSS SLOPE OF WALK & DIRT BACKSLOPE CAN SLOPE AWAY FROM CURB IN FILL.

ST-11

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT CONC SIDEWALK DETAILS
	PUBLIC WORKS DEPT	DATE: 10/2020	
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: SIDEWALK	

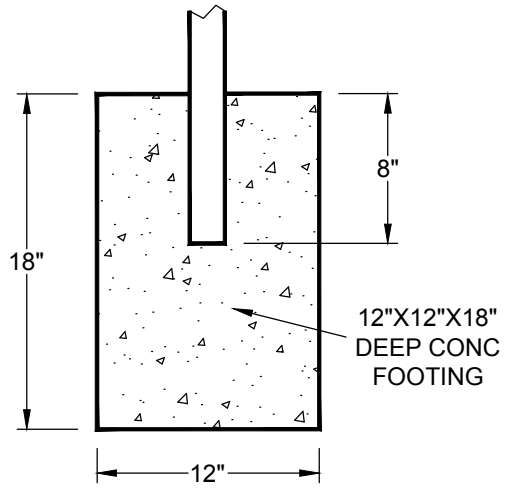
HANDRAIL DETAIL

N.T.S.



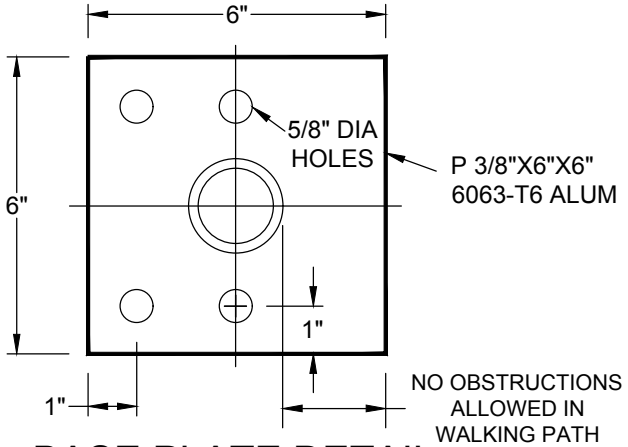
SEE MODOT STD. 608.20E FOR ADDITIONAL DETAILS

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



CONC FOOTING DETAIL

N.T.S.



BASE PLATE DETAIL

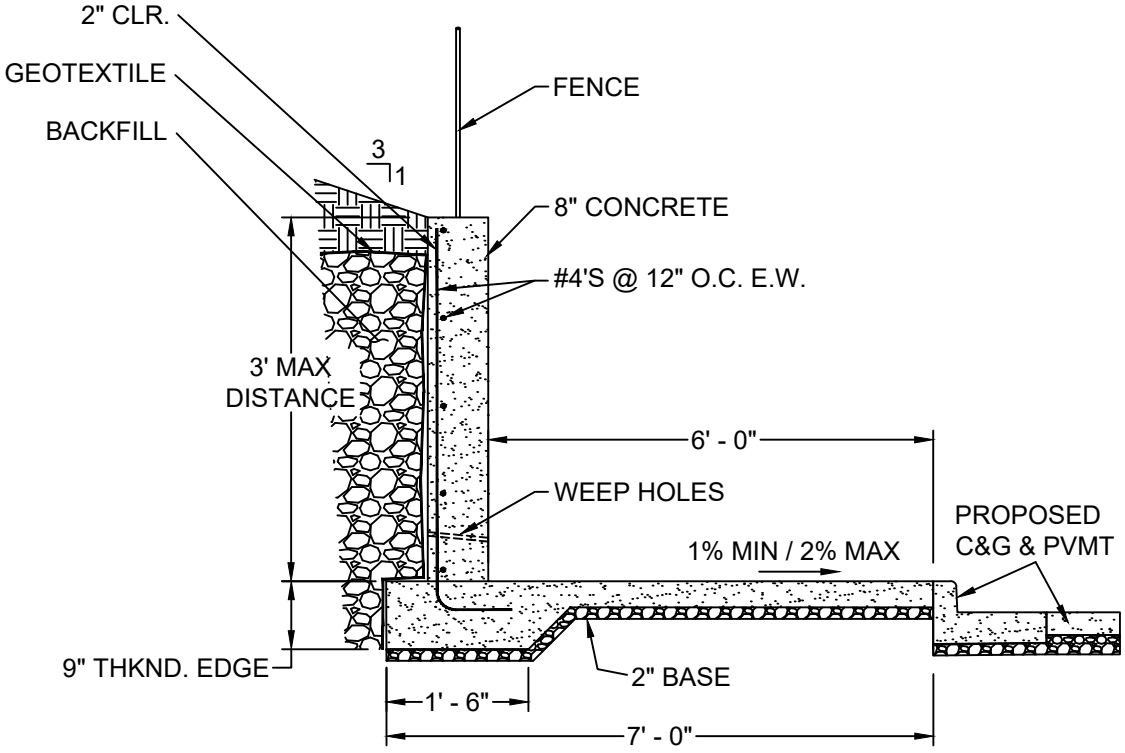
N.T.S.

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.

ST-12

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 4/2019	HANDRAIL DETAIL
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: HANDRAIL	



POURED CONCRETE SIDEWALK WALL

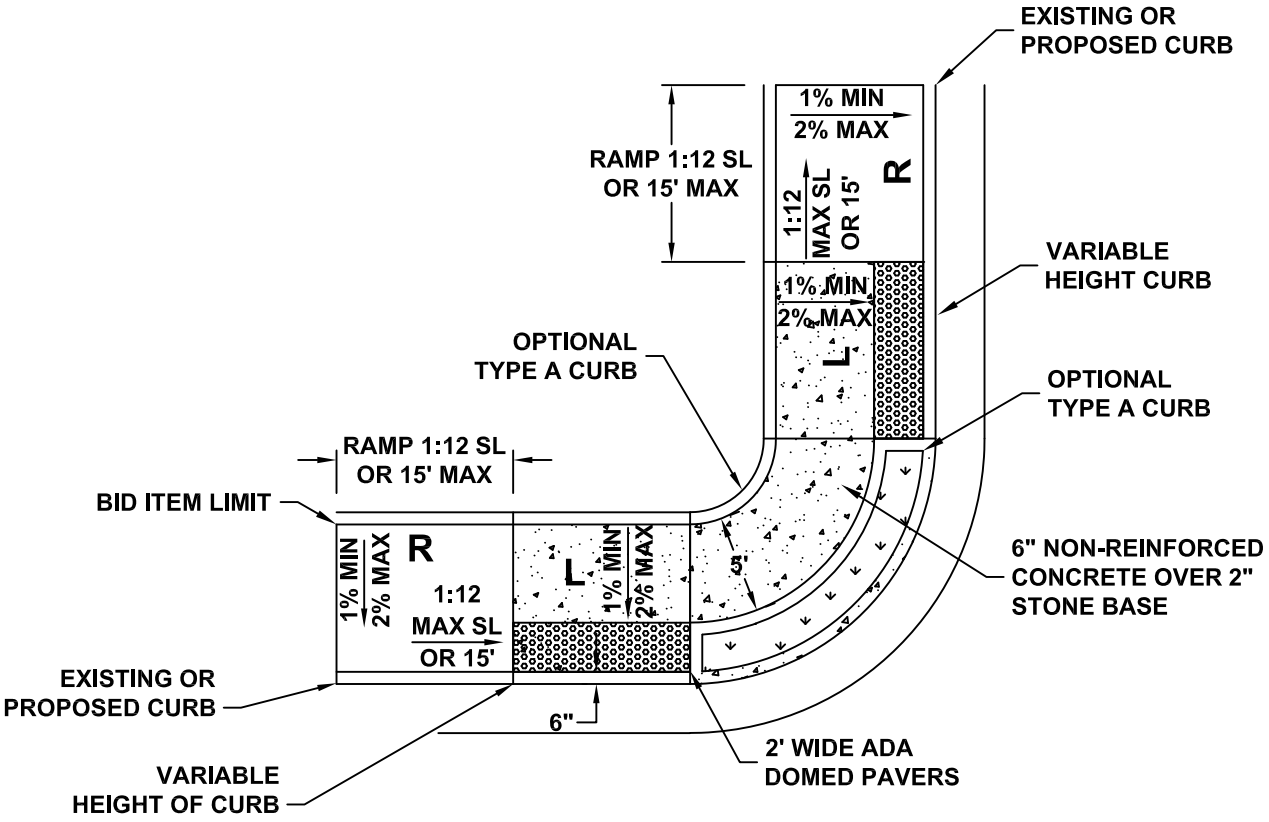
NTS

NOTES

- CONST 1/2" EXPANSION JOINTS IN WALL & SIDEWALK EVERY 50'. JOINTS TO MATCH.
- BACKFILL TO BE PER MISSOURI STANDARD SPECIFICATION FOR HIGHWAY CONSTRUCTION SECTION 1010.
- ANY WALL GREATER THAN 3' MUST BE DESIGNED AND SEALED BY A LICENSED ENGINEER.
- INSTALL 4' TALL FENCE ON TOP FOR WALL GREATER THAN 2'-6" TALL. TYPE TO BE DETERMINED IN THE FIELD.
- CONSTRUCT ½" EXPANSION JOINTS IN WALL & SIDEWALK EVERY 50'. JOINTS TO MATCH.
- WEEP HOLES @ 10' O.C. 1" DIA. MIN. 6" FROM BASE OF WALL.
- 4" SIDEWALK FOR RESIDENTIAL - 6" FOR COMMERCIAL.
- MIN. 2" CLR. FOR ALL REINFORCING

ST-13

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 10/2020	**POURED CONCRETE SIDEWALK WALL**
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: SIDEWALKWALL	



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. PAYMENT FOR TRUNCATED DOMES SHALL BE INCIDENTAL TO COST OF THE RAMPS
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

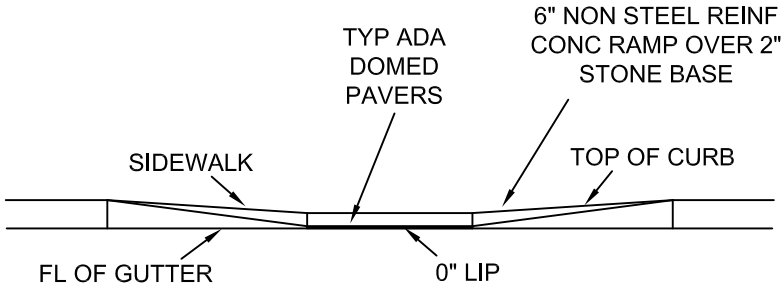
NOT TO SCALE

ST-14

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 10/2020	TYPE "A" ADA RAMP
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: TYPE A ADA RAMP	

NOTES:

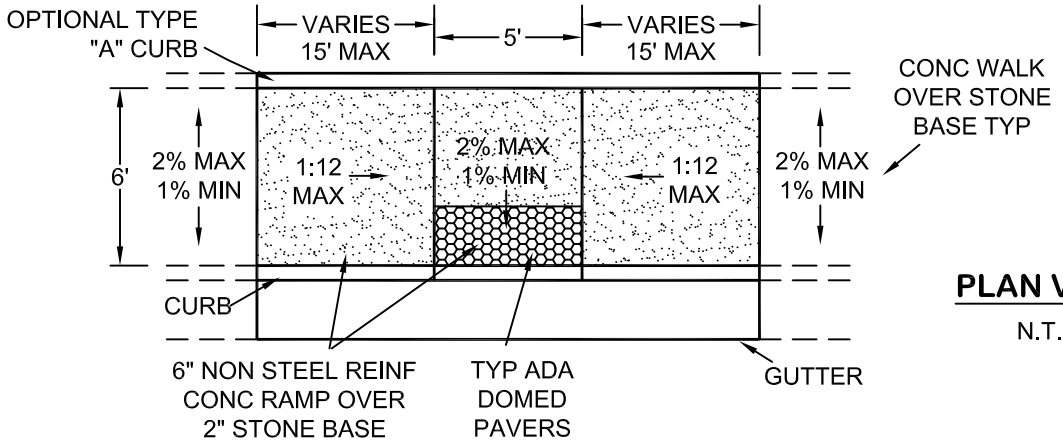
1. ALL GUTTER CONST IN FRONT OF RAMP & ALL C&G IN RAMP TRANSITIONS SHALL BE INCLUDED IN THE BID PRICE OF THE C&G.
2. BID PRICE (PAID BY SY) FOR ALL RAMPS SHALL INCLUDE ALL EXCAVATION, LABOR, & MATERIALS REQUIRED TO CONST RAMP. PAYMENT FOR TRUNCATED DOMES SHALL BE INCIDENTAL TO COST OF THE RAMPS
3. ALL 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.



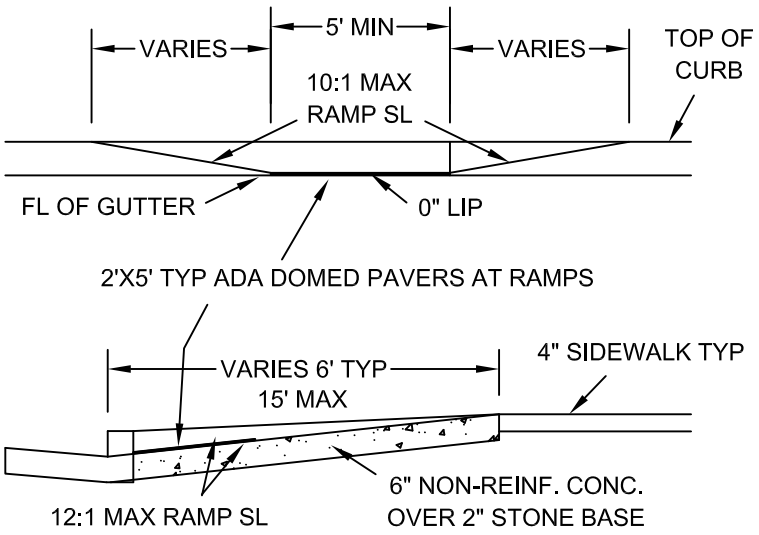
PLAN VIEW
N.T.S.

ST-15

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 12/2020	**TYPE 'B' ADA RAMP**
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: TYPEBADARAMP	

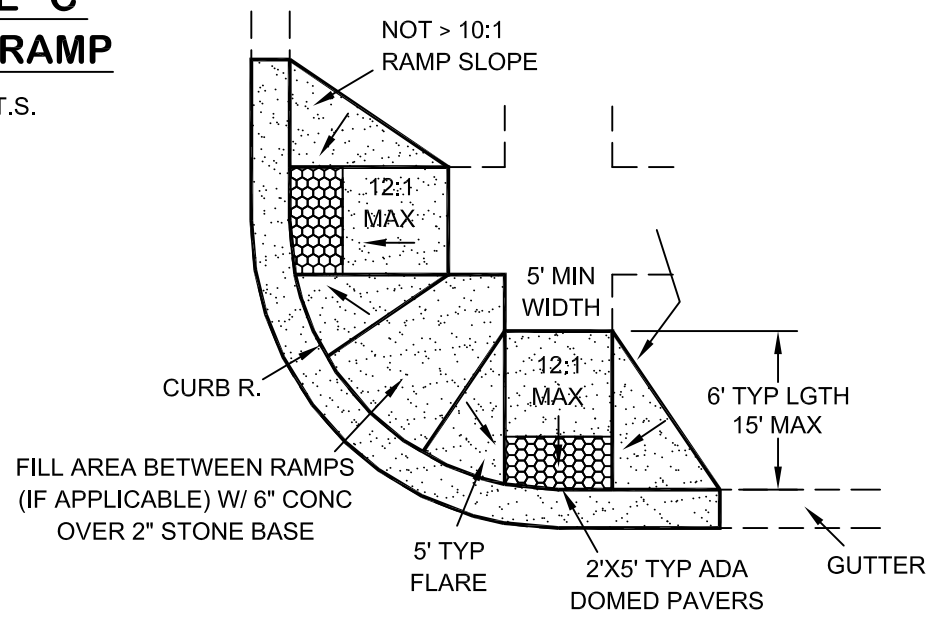
NOTES:

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. PAYMENT FOR TRUNCATED DOMES SHALL BE INCIDENTAL TO COST OF THE RAMPS.
3. ALL POURED CONC SHALL BE CLASS 'B' FIBER REINFORCED.
4. RAMPS SHALL NOT EXCEED 30" VERTICALLY WITHOUT 5' X 5' LANDING.



TYPE 'C' ADA RAMP

N.T.S.



ST-16

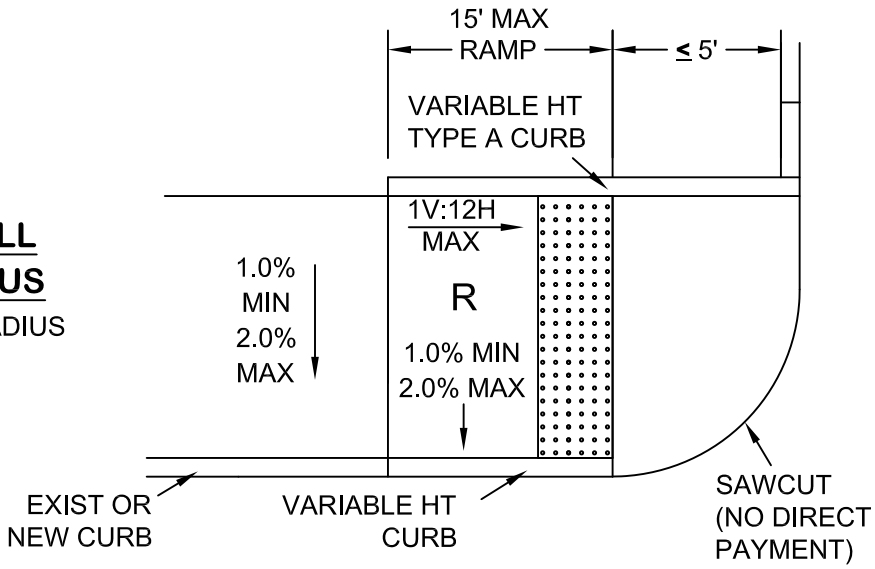
CITY OF Joplin	CITY OF JOPLIN, MO PUBLIC WORKS DEPT ENGINEERING DIVISION 602 S MAIN ST 64801	CKD BY: JOHNSON DATE: 10/2020 ENGINEER: HERTZBERG FILE: TYPECADARAMP	PROJECT **TYPE 'C' ADA RAMP**

TYPE 'D' ADA RAMP

N.T.S.

SMALL RADIUS

< 15' RADIUS

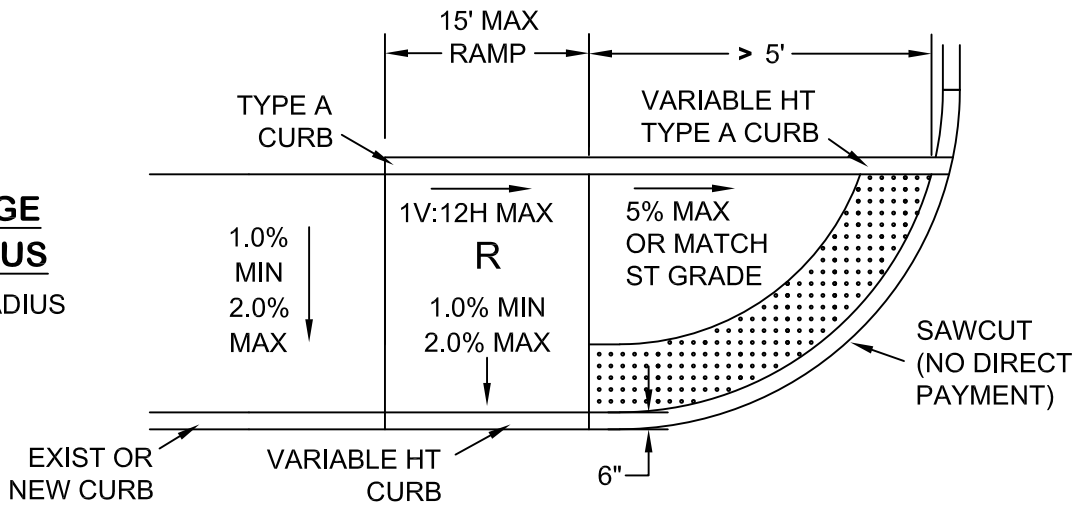


NOTES:

1. BID PRICE (PAID BY SY) FOR ALL RAMPS SHALL INCLUDE ALL EXCAVATION, LABOR, & MATERIALS REQUIRED TO CONSTRUCT RAMP.
2. ALL POURED CONCRETE SHALL BE CLASS 'B', 6" THICK, FIBER REINFORCED WITH 2" COMPACTED STONE.
3. DETECTABLE WARNING DEVICES REQUIRED AT PUBLIC STREET & SIGNALIZED ENTRANCES. PAYMENT FOR TRUNCATED DOMES SHALL BE INCIDENTAL TO COST OF THE RAMPS.
4. RAMP WIDTH MAY BE REDUCED TO 4' WITH APPROVAL OF THE ENGINEER.
5. TYPE A CURB SHALL BE INCLUDED IN PRICE OF RAMP.
6. RAMPS SHALL NOT EXCEED 30" VERTICALLY WITHOUT 5' X 5' LANDING.

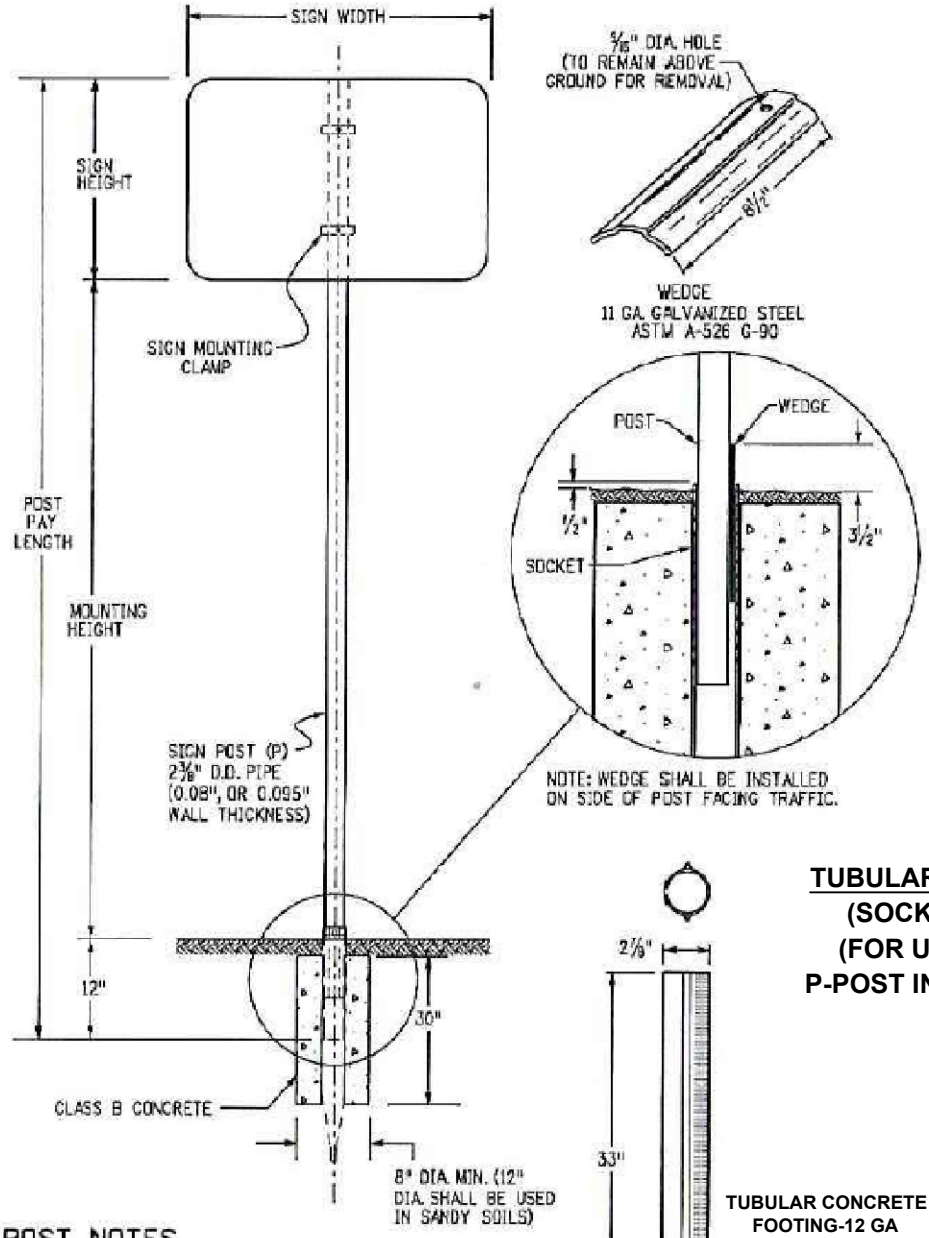
LARGE RADIUS

≥ 15' RADIUS



ST-17

CITY OF Joplin	CITY OF JOPLIN, MO PUBLIC WORKS DEPT ENGINEERING DIVISION 602 S MAIN ST 64801	CKD BY: JOHNSON DATE: 10/2020 ENGINEER: HERTZBERG FILE: TYPEDADARAMP	PROJECT **TYPE 'D' ADA RAMP**



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

TUBULAR CONCRETE FOOTING-12 GA GALVANIZED STEEL ASTM-787

POST NOTES

THE POST MAY BE PRE-PUNCHED WITH ⅜" DIA HOLES AND THE SIGN MOUNTED DIRECTLY TO THE POST, OR AN APPROVED MOUNTING CLAMP MAY BE USED TO MOUNT THE SIGN TO THE POST. IF THE POST IS PRE-PUNCHED, THE HOLES SHALL BE SPACED THE FOLLOWING DISTANCES FROM THE TOP: **1", 3', 10", 16", 21", 23", 24", 27", 33", 37", 39", & 45"**

POST SPECIFICATIONS

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

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

CITY OF Joplin

CITY OF JOPLIN, MO	CKD BY:	JOHNSON
PUBLIC WORKS DEPT	DATE:	03/2019
ENGINEERING DIVISION	ENGINEER:	HERTZBERG
602 S MAIN ST 64801	FILE:	SIGN POST 1

PROJECT

SIGN SUPPORT & INSTALLATION DETAILS

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.

7' MOUNTING HEIGHT

SIGN HEIGHT (FT) \ SIGN WIDTH (FT)	1	2	2.5	3	4	5	6	7	8	9
1	P	P	P	P	P	P1	SIZES NOT USED			
2	P	P	P	P	P	P1	TWO P1'S			
2.5	P	P	P	P	P1	P1				
3	P	P	P	P1	P1	P1				
4	P	P1	P1	P1	P1	P1				
5	SIZES NOT USED		P1	P1	P1	P1	SIZE NOT USED			TWO P2'S
6			P1	P1	P1	*P2				
7			P1	P1	*P2	TWO P1'S		TWO P2'S		

* SEE CHART NOTE 4

8' MOUNTING HEIGHT

SIGN HEIGHT (FT) \ SIGN WIDTH (FT)	1	2	2.5	3	4	5	6	7	8	9
1	P	P	P	P	P	P1	SIZES NOT USED			
2	P	P	P	P	P1	P1	TWO P1'S			
2.5	P	P	P	P1	P1	P1				
3	P	P	P1	P1	P1	P1				
4	P	P1	P1	P1	P1	P1				
5	SIZES NOT USED		P1	P1	P1	*P2	SIZES NOT USED			TWO P2'S
6			P1	P1	P1	*P2				
7			P1	P1	TWO P1'S	TWO P1'S		TWO P2'S		

* SEE CHART NOTE 4

9' MOUNTING HEIGHT

SIGN HEIGHT (FT) \ SIGN WIDTH (FT)	1	2	2.5	3	4	5	6	7	8	9
1	P	P	P	P	P	P1	SIZES NOT USED			
2	P	P	P	P	P1	P1	TWO P1'S			
2.5	P	P	P	P1	P1	P1				
3	P	P1	P1	P1	P1	P1				
4	P	P1	P1	P1	P1	P1				
5	SIZES NOT USED		P1	P1	P1	*P2	SIZES NOT USED			TWO P2'S
6			P1	P1	*P2	TWO P1'S		TWO P2'S		
7			P1	P2	TWO P1'S	TWO P1'S		TWO P2'S		

* SEE CHART NOTE 4

CITY OF Joplin	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT
	PUBLIC WORKS DEPT	DATE: 03/2019	SIGN SUPPORT & INSTALLATION DETAILS
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: SIGN POST 2	