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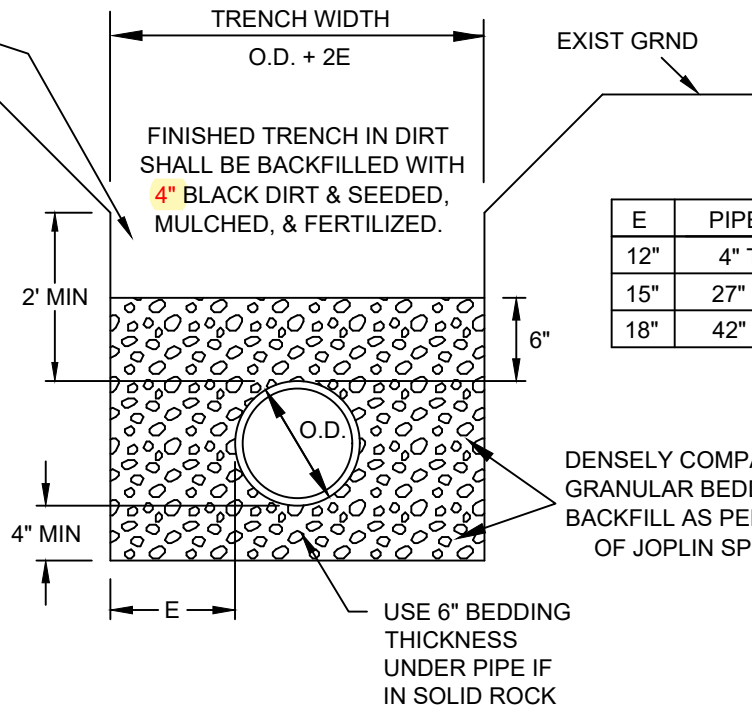
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CONC PVMT REPAIR &  
CRUSHED STN BKFILL  
WHEN UNDER STREET OR  
DRIVES. EXTEND TO 4'  
EACH SIDE OF CURB OR  
PVMT WHEN XING STREET.

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

**PIPE BEDDING  
DETAIL**  
NTS



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

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

USE 6" BEDDING  
THICKNESS  
UNDER PIPE IF  
IN SOLID ROCK

SAN-01



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

PROJECT  
**PIPE BEDDING  
DETAIL**

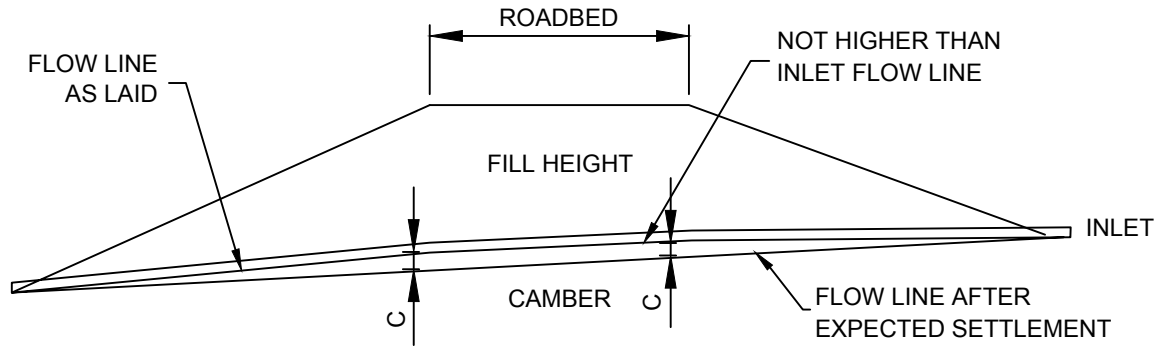
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SAN-02



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

PLACE HOLDER



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.

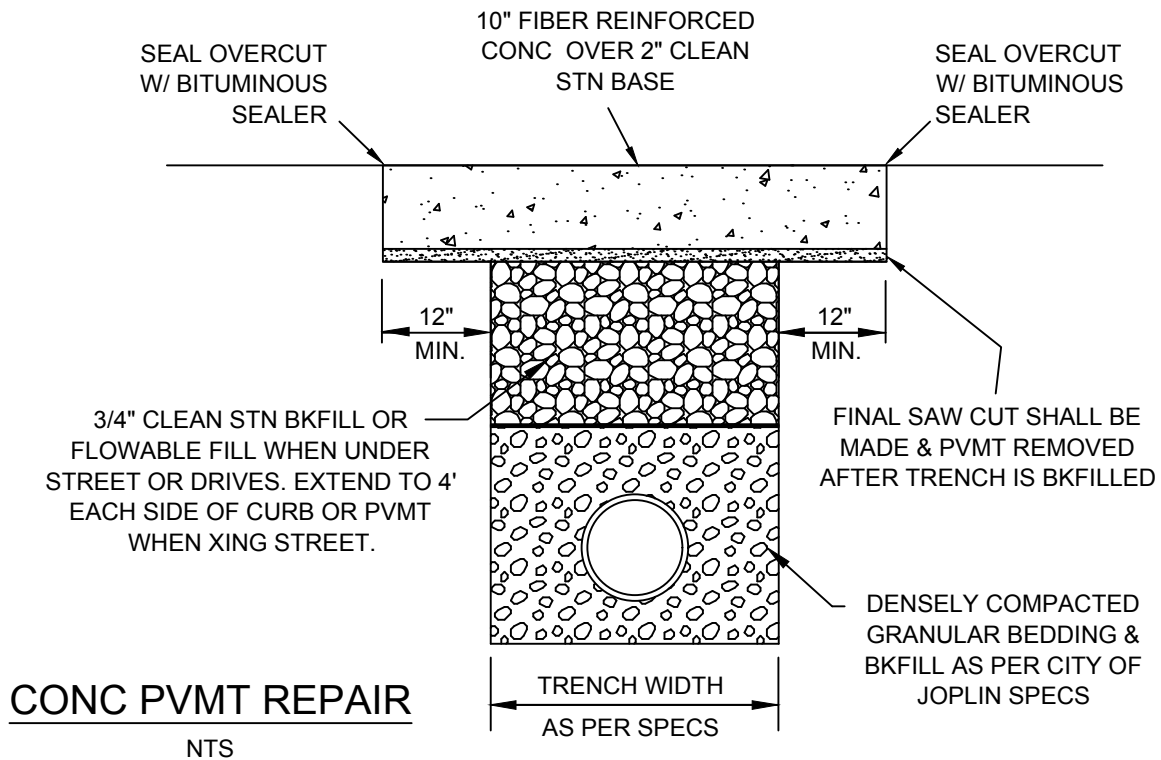
## FILL HEIGHT LIMITS

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



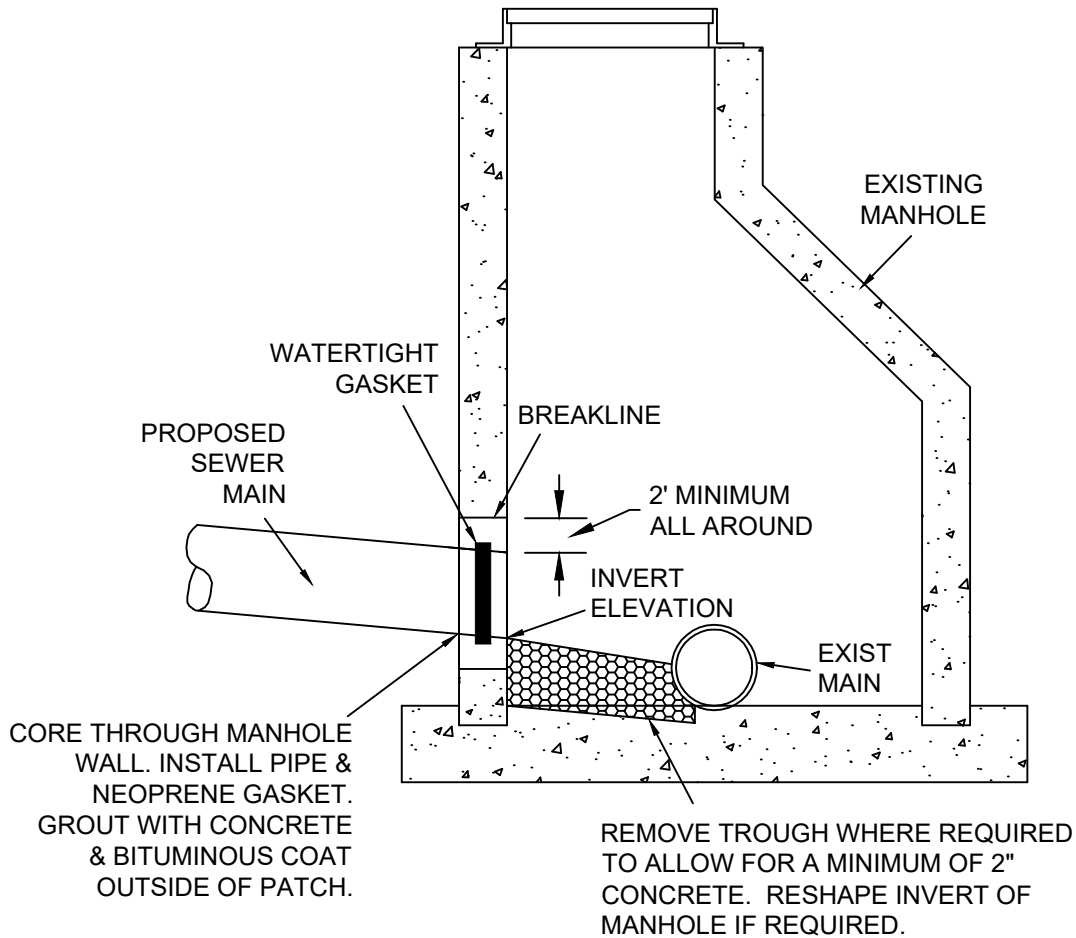
NOTES:  
1. BLACK DYE PER CITY OF JOPLIN SPECIFICATIONS 1700.3.12

SAN-05



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

PROJECT  
**CONC  
PVMT REPAIR**



EXISTING  
MANHOLE TAP

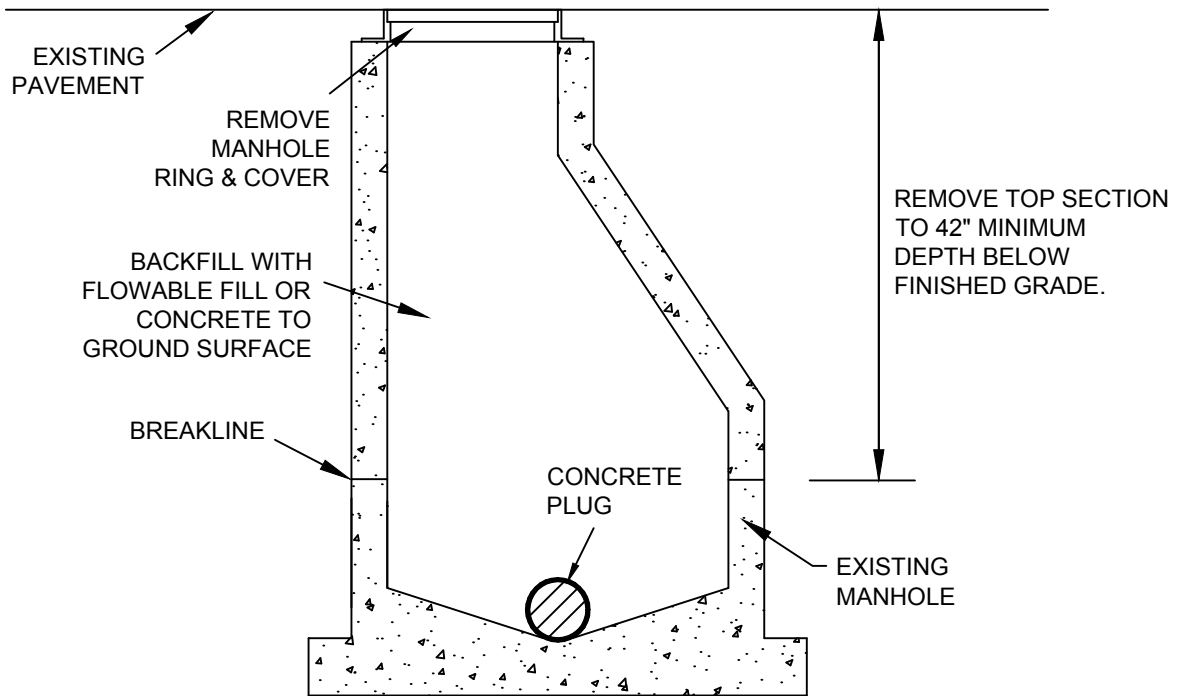
NTS

SAN-06



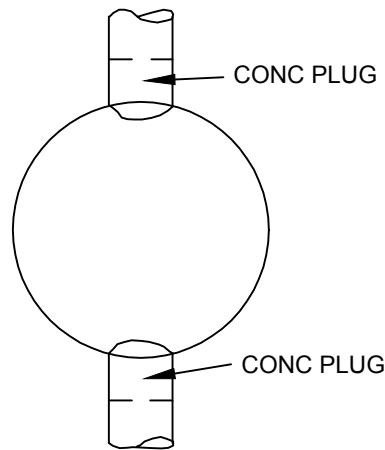
CITY OF JOPLIN, MO	CKD BY: JOHNSON
PUBLIC WORKS DEPT	DATE: 2/2021
ENGINEERING DIVISION	ENGINEER: HERTZBERG
602 S MAIN ST 64801	FILE: MHTAP

PROJECT  
**EXISTING  
MANHOLE TAP**



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

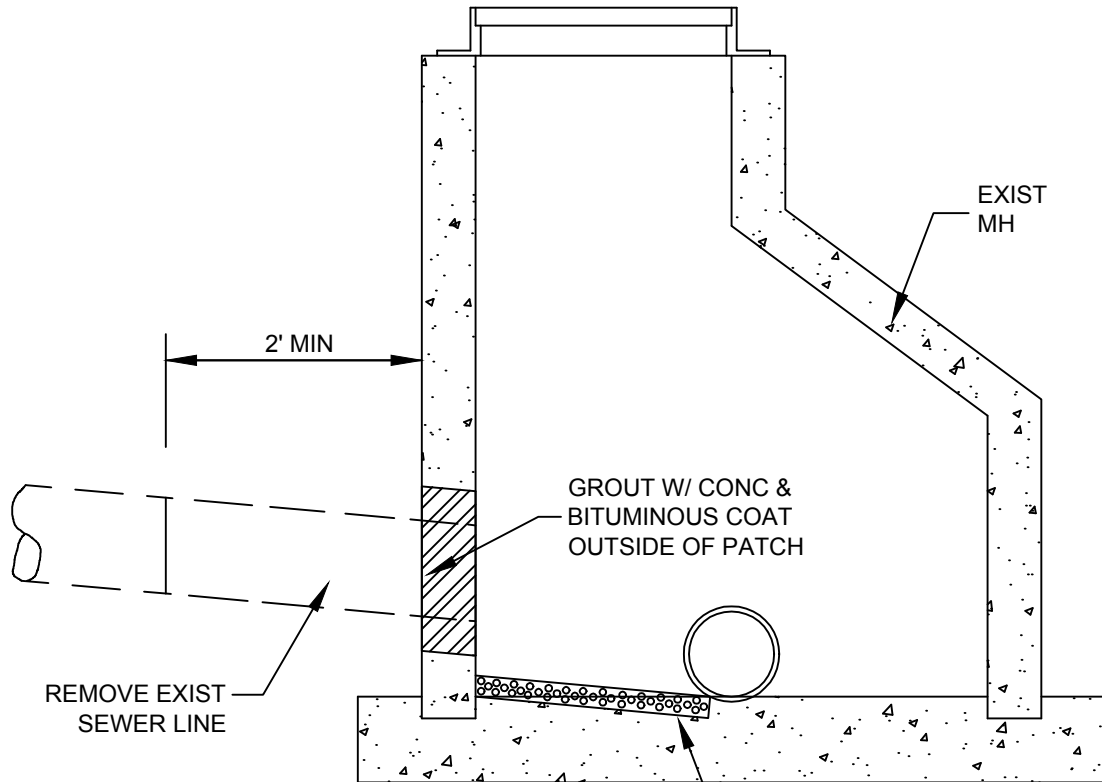
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SAN-07



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

PROJECT  
**MANHOLE  
ABANDONMENT**



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

MH PLUG DETAIL

N.T.S.

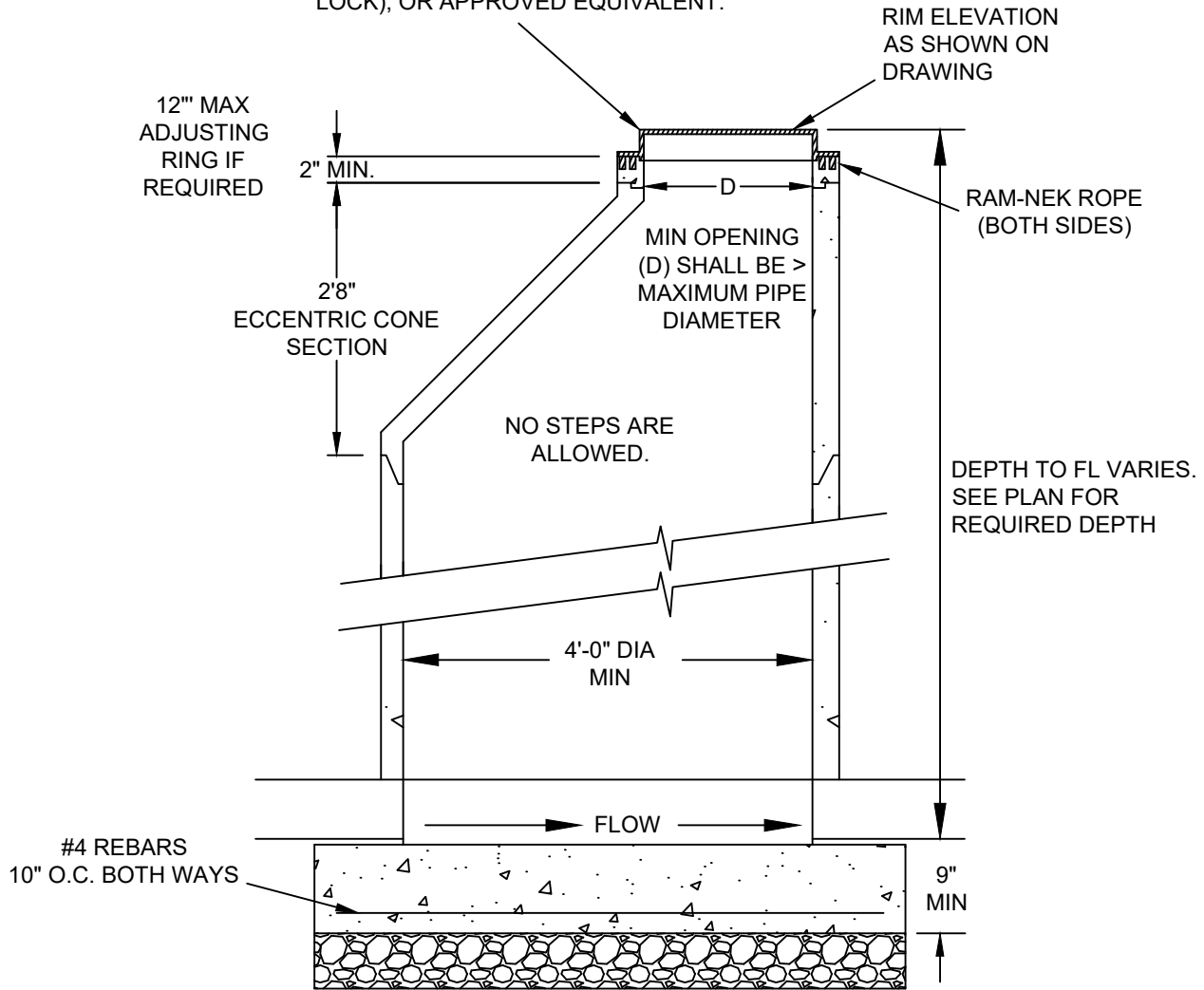
SAN-08



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

PROJECT  
MH PLUG

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.



**NOTES:**

- BEDDING SHALL BE IN ACCORDANCE WITH CITY OF JOPLIN STANDARD SPECIFICATIONS SECTION 4300.3.2

**PRECAST MANHOLE DETAIL**

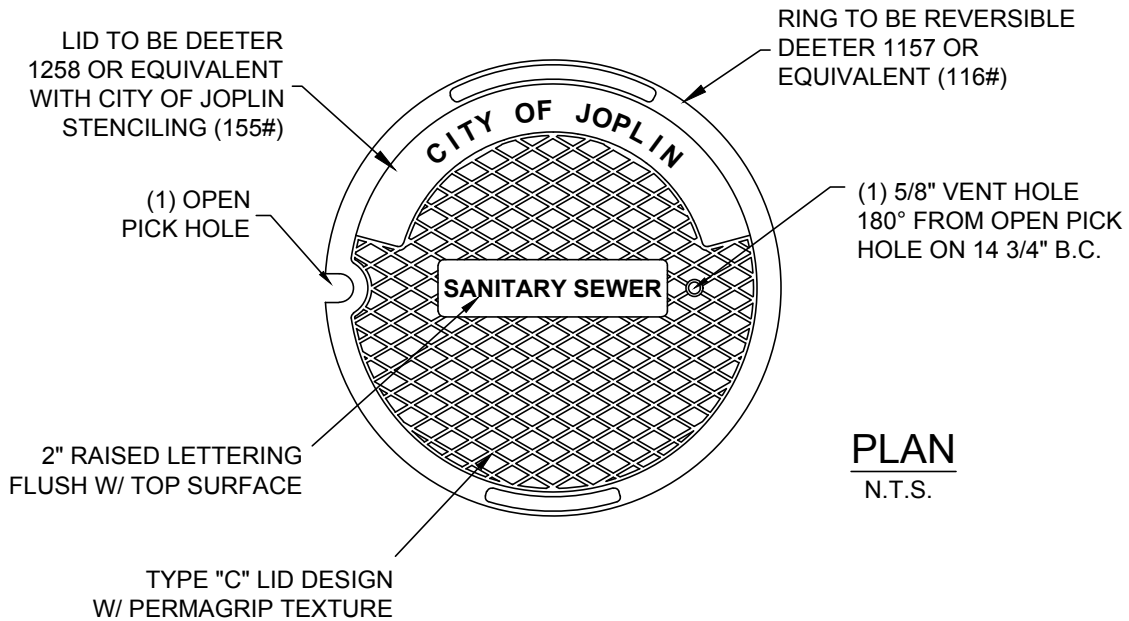
N.T.S.

SAN-09

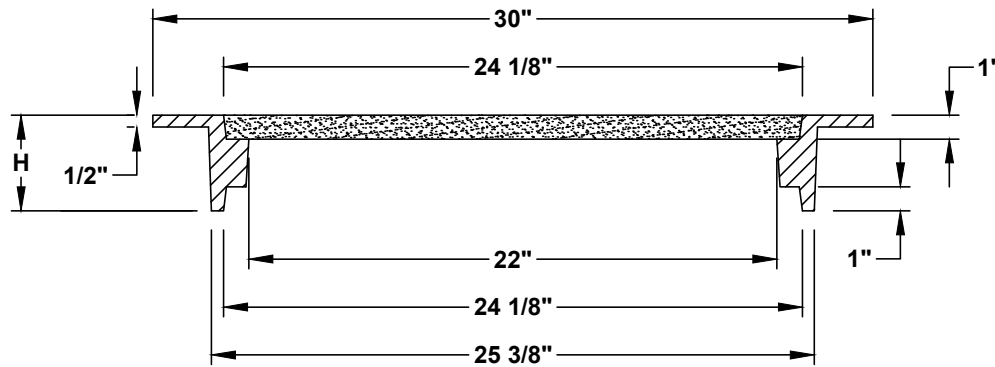


CITY OF JOPLIN, MO	CKD BY: JOHNSON
PUBLIC WORKS DEPT	DATE: 10/2021
ENGINEERING DIVISION	ENGINEER: HERTZBERG
602 S MAIN ST 64801	FILE: MHPRECAST

PROJECT  
**PRECAST MH DETAIL**



**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".

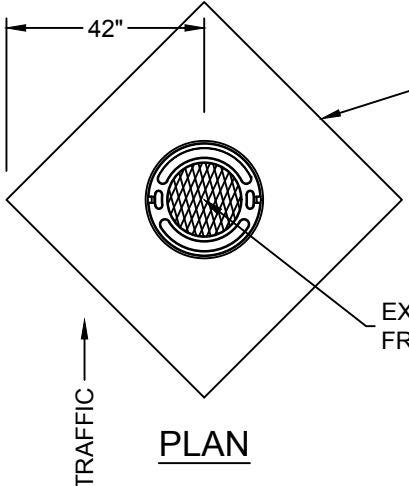
MATERIAL: CAST GRAY IRON ASTM A-48,  
CLASS 35B FINISH: NO PAINT

SAN-10



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

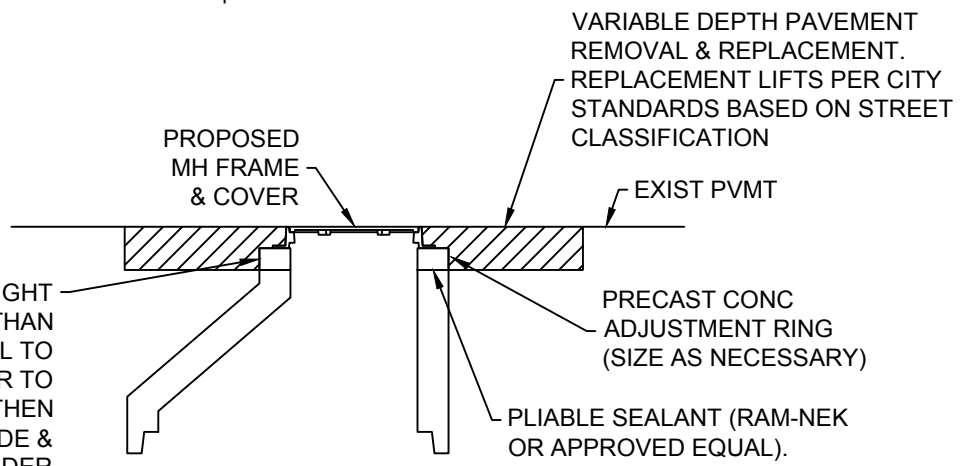
PROJECT  
**STANDARD SAN SEWER  
MH RING & COVER**



SAWCUT 5'x5' DIAMOND  
LEADING EDGE OF DIAMOND  
SHALL BE FACING TRAFFIC.  
CRACK SEAL PAVEMENT  
JOINTS PER CITY  
SPEC/STANDARDS

EXISTING MH  
FRAME & LID

**PLAN**



FOR SMALL HEIGHT  
ADJUSTMENTS (LESS THAN  
3") ADD WEDGE MATERIAL TO  
BRING FRAME & COVER TO  
EXIST PVMT HEIGHT & THEN  
GROUT (BOTH INSIDE &  
OUTSIDE) THE AREA UNDER  
THE FRAME W/ NON-SHRINK,  
NON-METALLIC GROUT.

**SECTION**

**MANHOLE FRAME & COVER REMOVAL &  
REPLACEMENT USING ASPHALT PAVEMENT  
NTS**

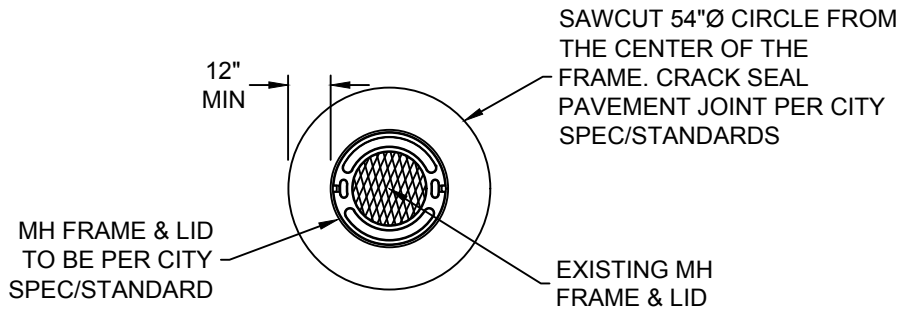
**GENERAL NOTES:**

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.

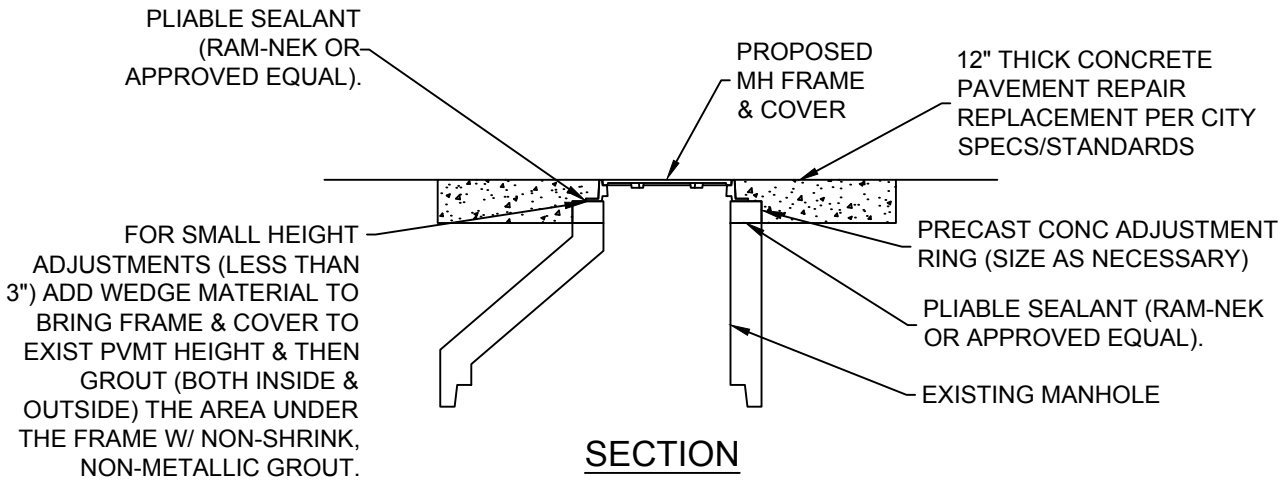
**METHOD #1**

SAN-12

CITY OF <b>Joplin</b>	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT <b>MH COVER REMOVAL &amp; REPLACEMENT #1</b>
	PUBLIC WORKS DEPT	DATE: 2/2019	
	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).

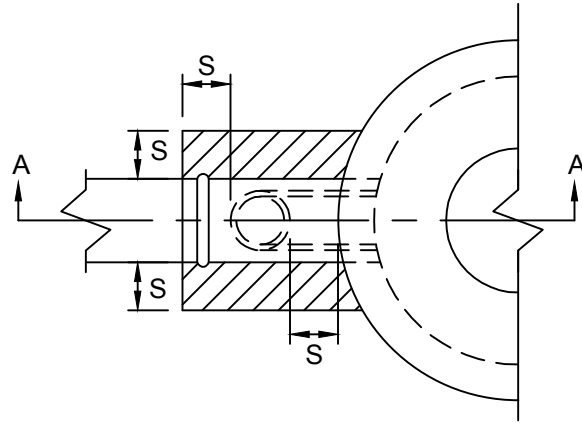
**METHOD #2**

SAN-13

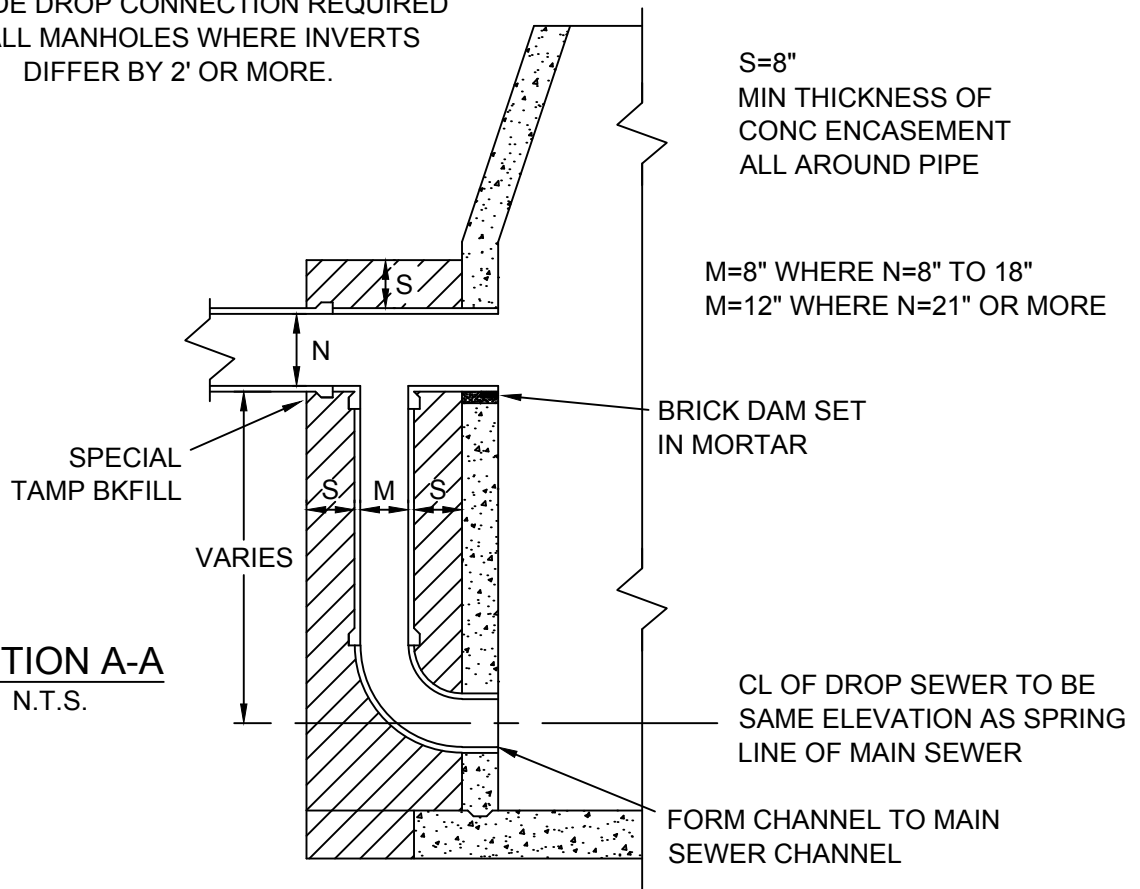


CITY OF JOPLIN, MO	CKD BY: JOHNSON
PUBLIC WORKS DEPT	DATE: 2/2019
ENGINEERING DIVISION	ENGINEER: HERTZBERG
602 S MAIN ST 64801	FILE: MH RIM REPAIR 3.1

PROJECT  
**MH COVER REMOVAL  
& REPLACEMENT #2**



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



**OUTSIDE DROP MH CONNECTION**

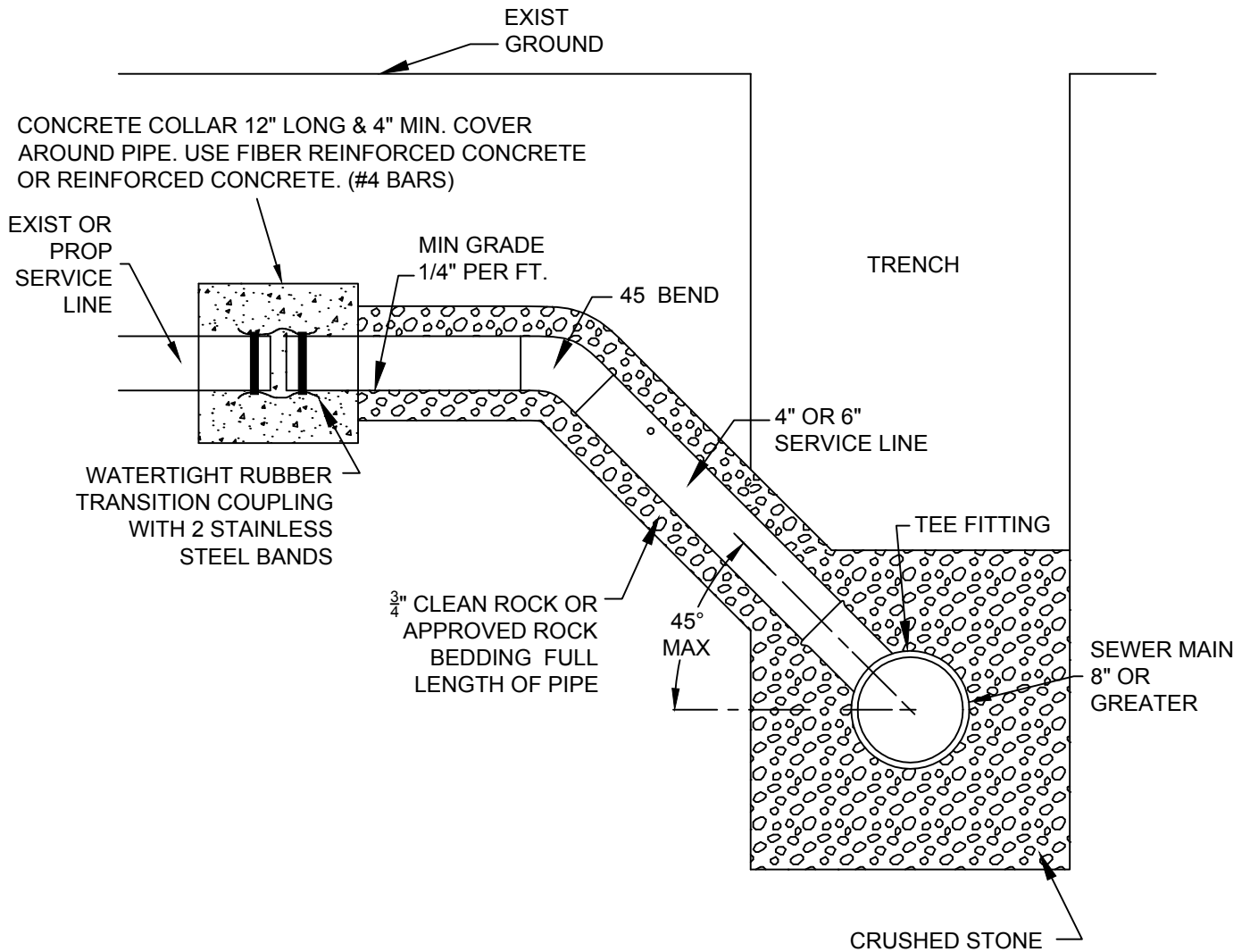
N.T.S.

SAN-14



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

PROJECT  
**OUTSIDE DROP  
MH 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**

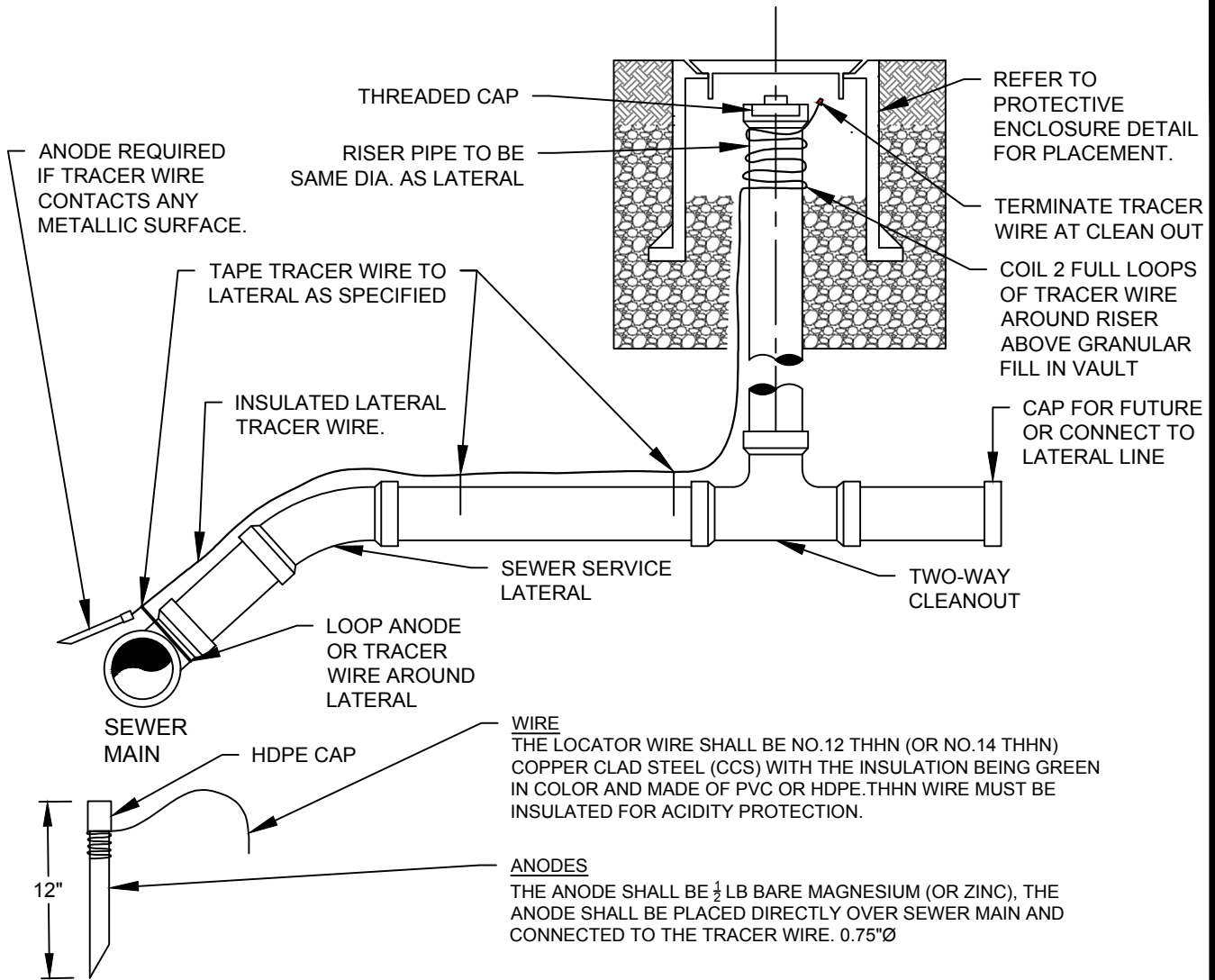
N.T.S.

SAN-15



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

PROJECT  
**SEWER  
SERVICE CONNECTION**



**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**

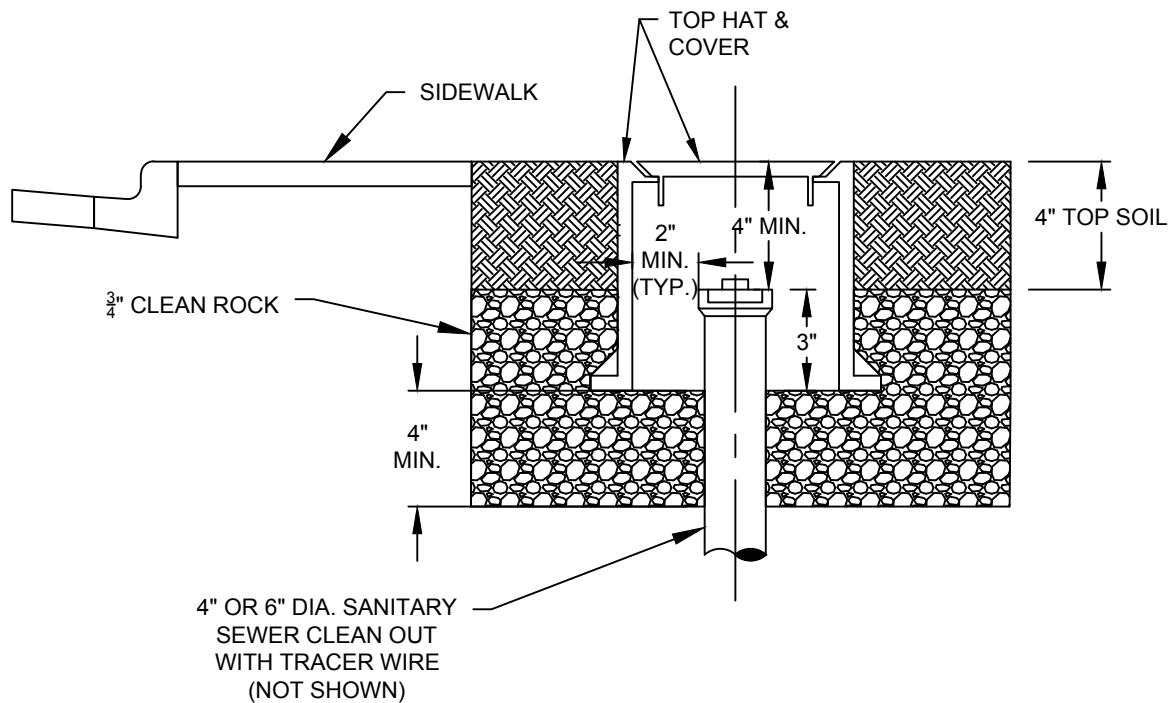
NTS

SAN-16



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

PROJECT  
**TRACER WIRE  
FOR SERVICE LINES**




**NOTES**

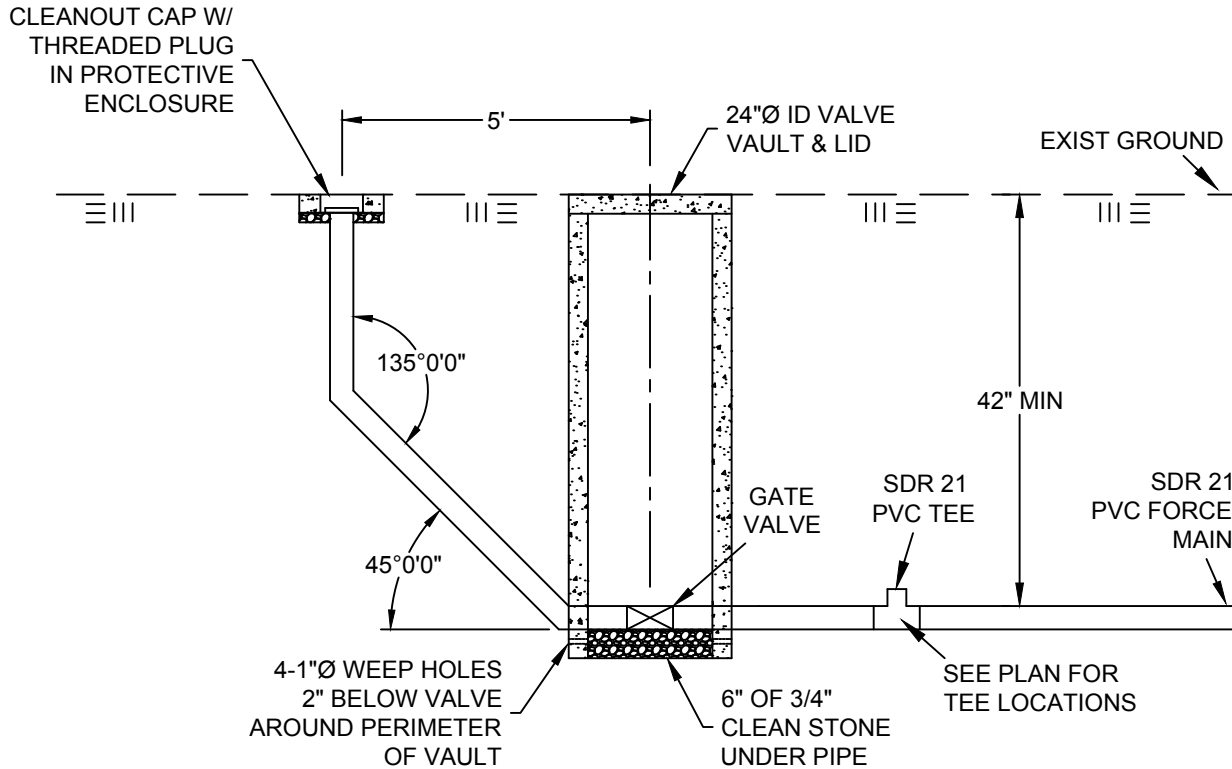
1. A SEALED CLEAN OUT WITH REMOVABLE CAP SHALL BE INSTALLED WITHIN 3' OF THE PUBLIC EASEMENT, OR PROPERTY LINE UNLESS OTHERWISE APPROVED BY THE ENGINEER, AND SHALL BE HOUSED IN A PROTECTIVE ENCLOSURE, AS PART OF THE REQUIREMENTS OF STATE STATUTE NO.319.033. THIS PROTECTIVE ENCLOSURE SHALL BE THE ACCESS 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 <i>Joplin</i> 	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT <b>PROTECTIVE ENCLOSURE          FOR CLEAN OUTS</b>
	PUBLIC WORKS DEPT	DATE: 2/2019	
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: PROTECT ENCL	




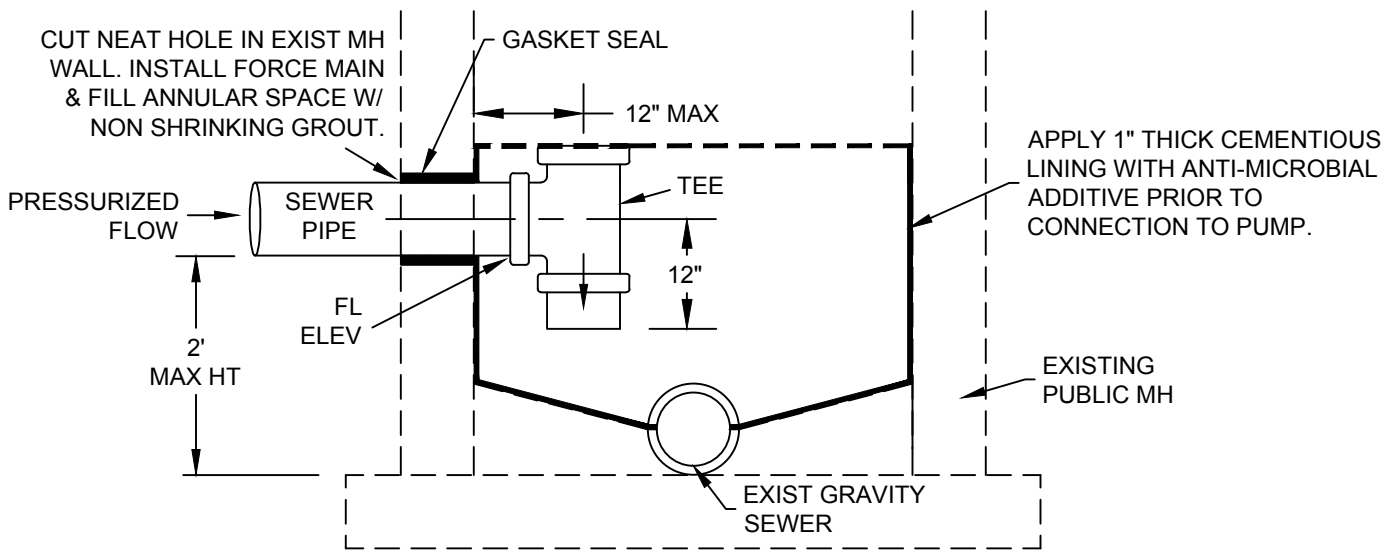
**PRESSURE SEWER CLEAN OUT  
& RISER DETAIL**

N.T.S.

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

SAN-18

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

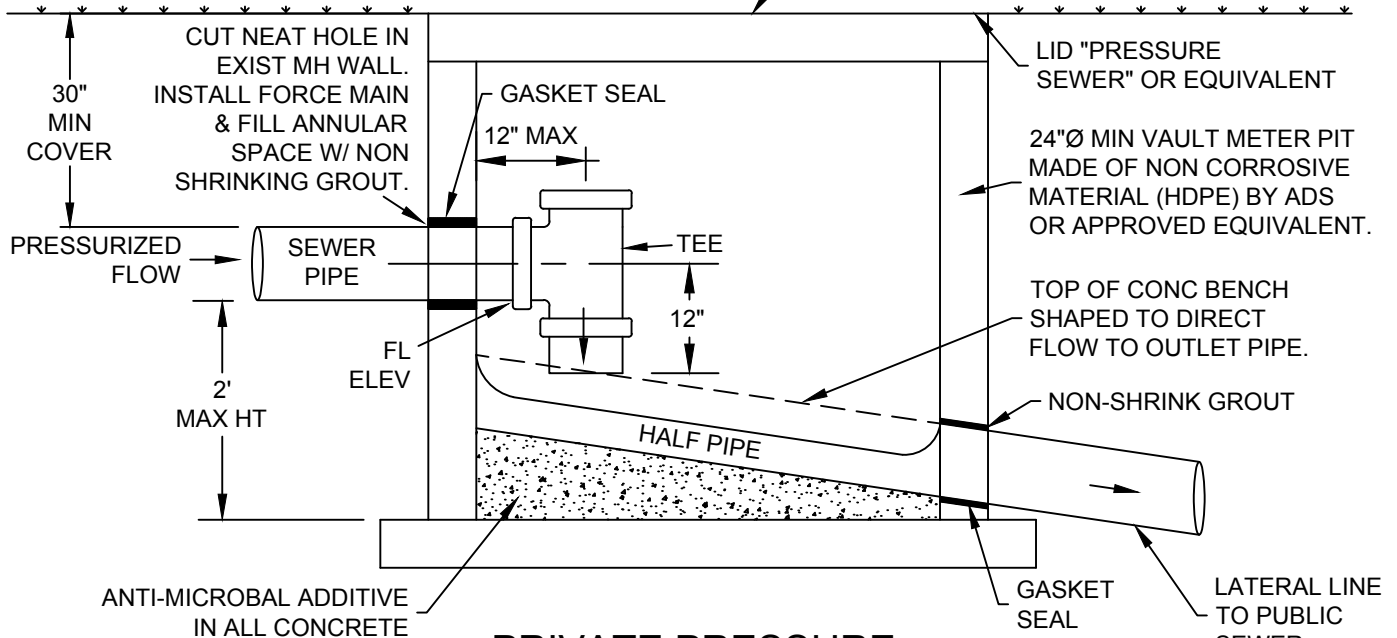


**PUBLIC PRESSURE  
MH CONNECTION DETAIL**

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.


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



**PRIVATE PRESSURE  
MH CONNECTION DETAIL**

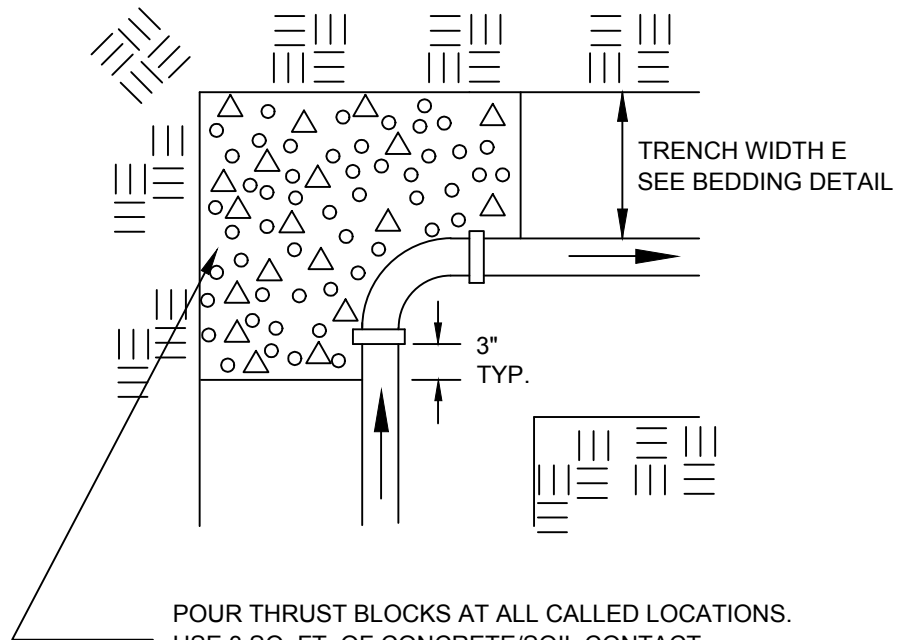
N.T.S.

SAN-19

CITY OF <b>Joplin</b> 	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT <b>PRESSURE MH DETAIL</b>
	PUBLIC WORKS DEPT	DATE: 2/2019	
	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.



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

THRUST BLOCK  
DETAIL

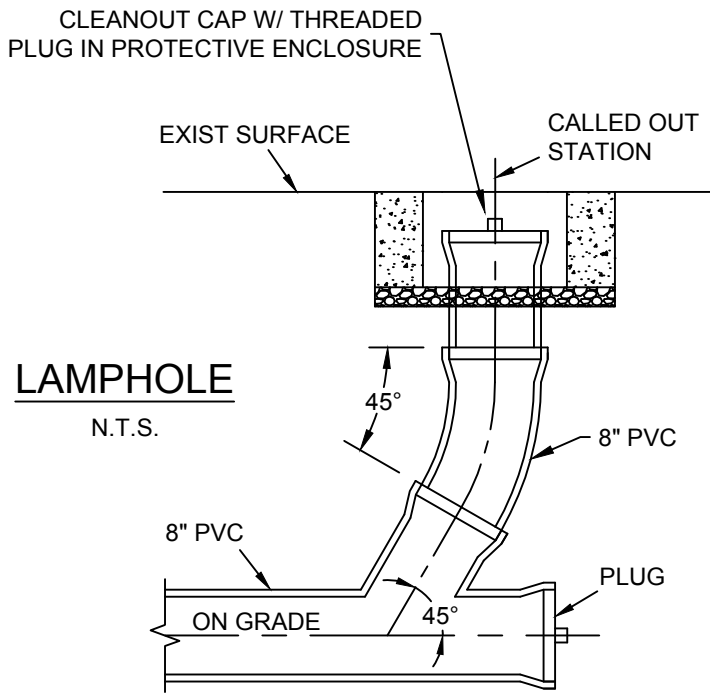
N.T.S.

SAN-20



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

PROJECT  
**THRUST BLOCK  
DETAIL**



**LAMPHOLE**  
N.T.S.

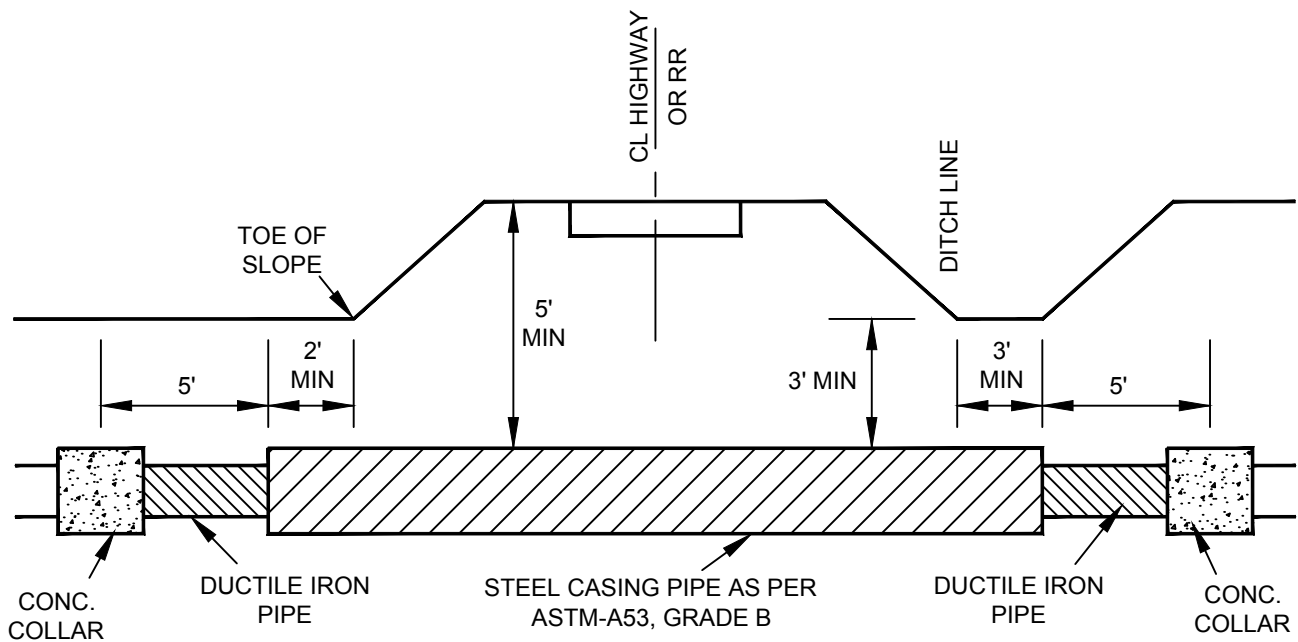
INSTALLATION ALLOWED ONLY UPON CITY ENGINEER'S APPROVAL.

SAN-21



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

PROJECT  
**SANITARY SEWER  
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

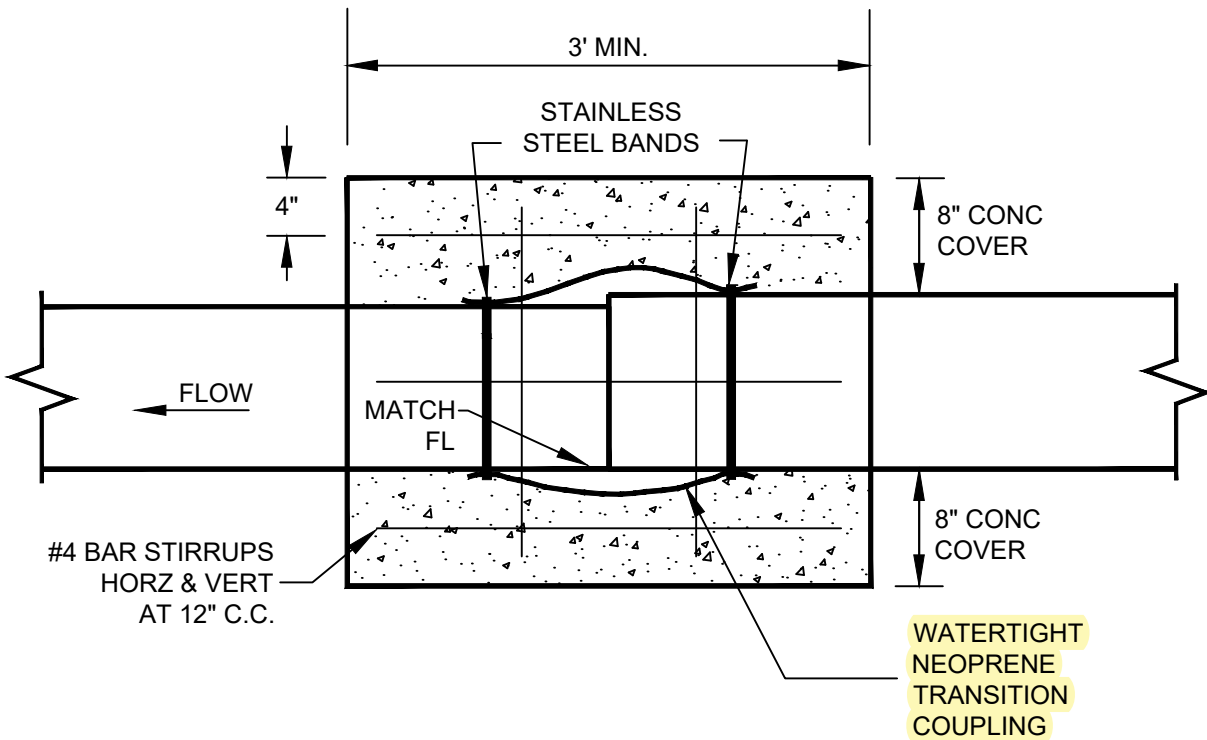
N.T.S.

SAN-22



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

PROJECT  
HIGHWAY OR RR  
SEWER XING DETAIL



**CONC COLLAR**

N.T.S.

NOTE:

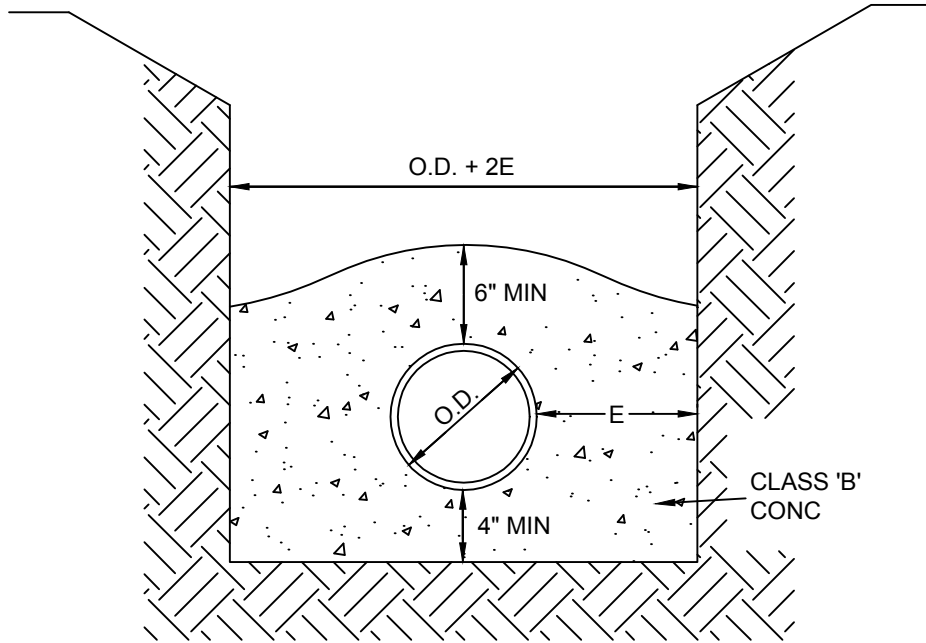
CONCRETE COLLARS SHALL BE INSTALLED OVER THE JOINTS OF TWO ADJOINING PIPES OF DIFFERING MATERIALS.

SAN-23



CITY OF JOPLIN, MO	CKD BY: JOHNSON
PUBLIC WORKS DEPT	DATE: 2/2021
ENGINEERING DIVISION	ENGINEER: HERTZBERG
602 S MAIN ST 64801	FILE: CONCCOLL

PROJECT  
**CONCRETE COLLAR**



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

## CONC ENCASEMENT

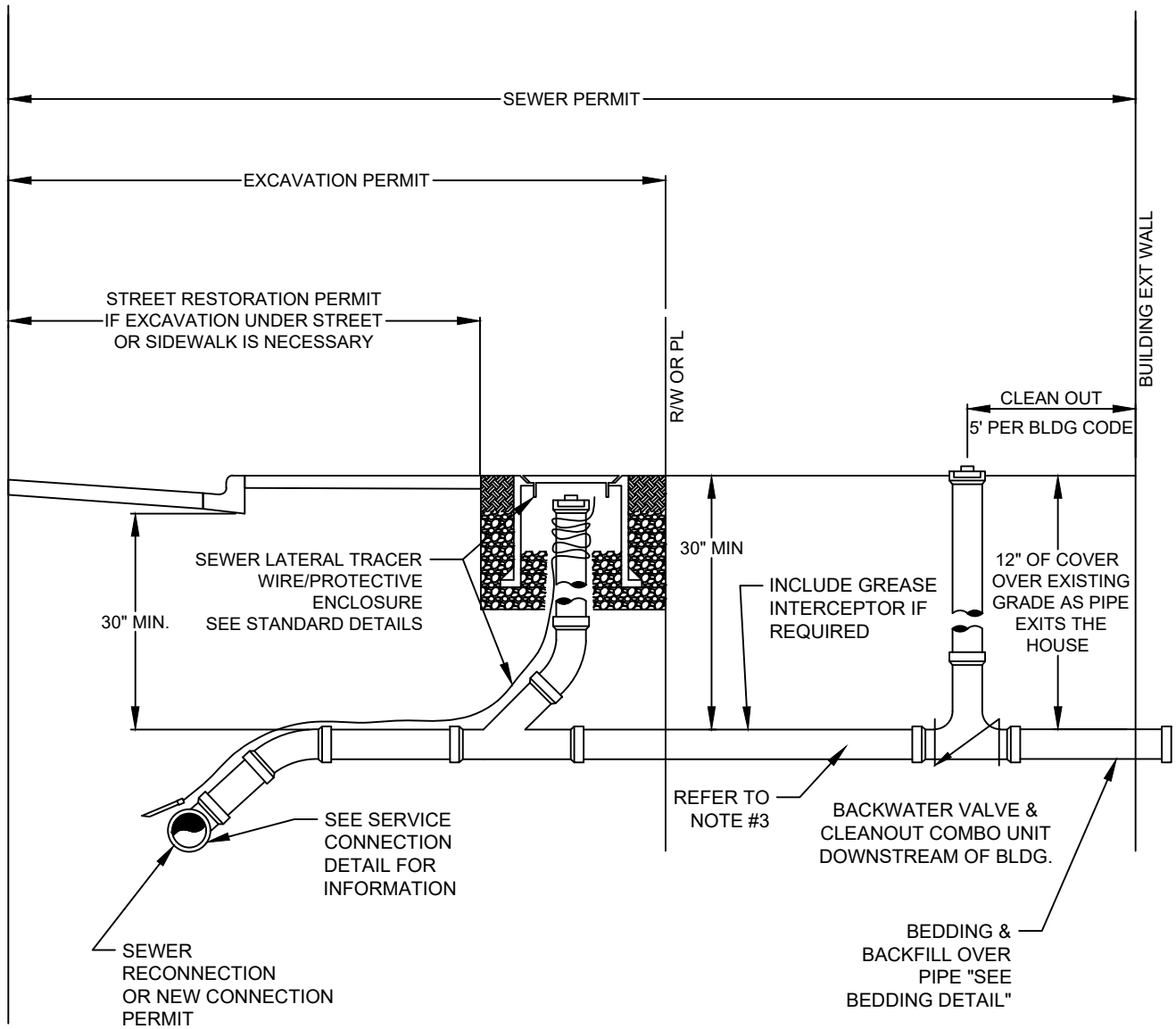
N.T.S.

SAN-24



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

PROJECT  
SEWER PIPE  
CONC ENCASEMENT



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

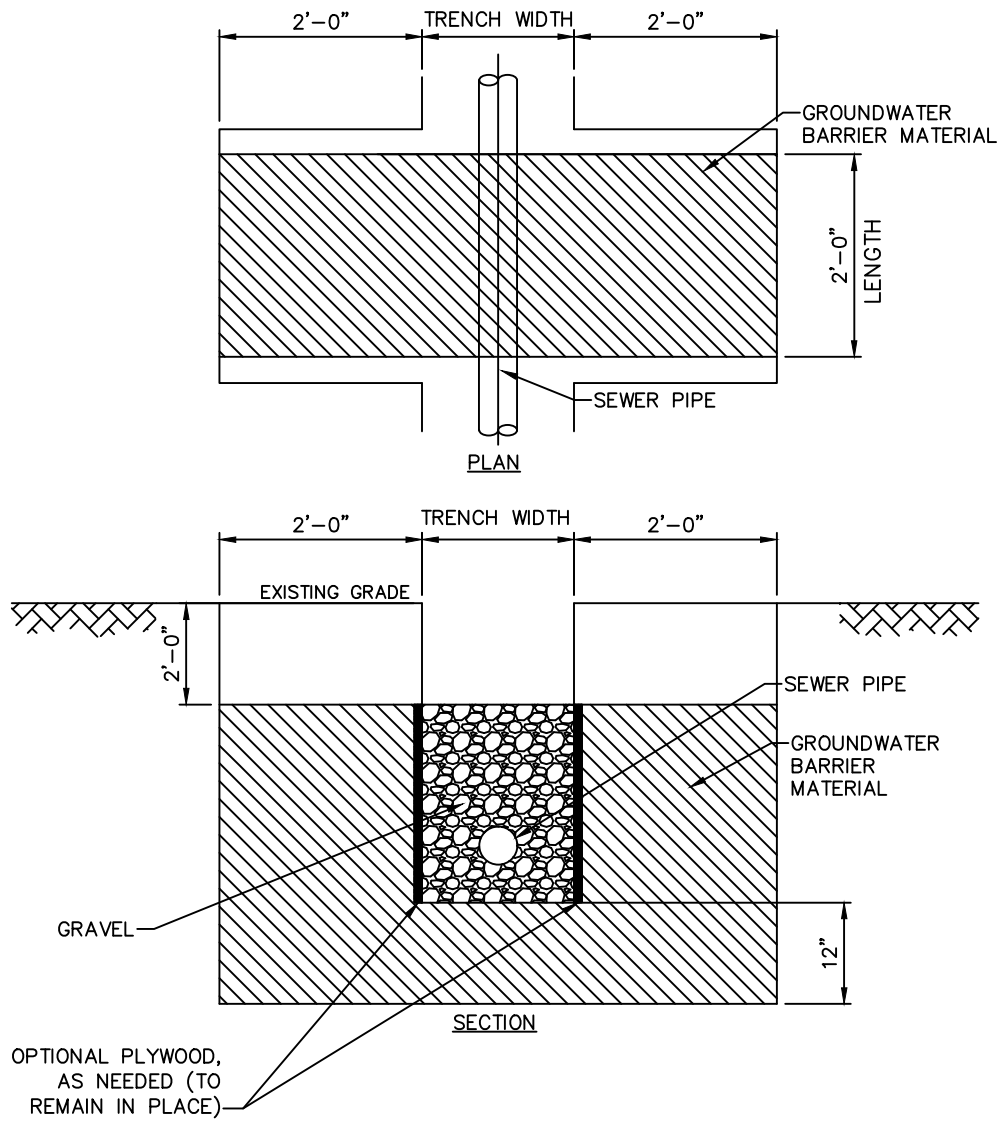
SAN-25



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

CKD BY: JOHNSON  
DATE: 2/2021  
ENGINEER: HERTZBERG  
FILE: C/R-SS PERMITS

PROJECT  
COMM/RESIDENTIAL  
SS PERMITS



## TRENCH GROUNDWATER BARRIER DETAIL

NTS

**NOTES:**

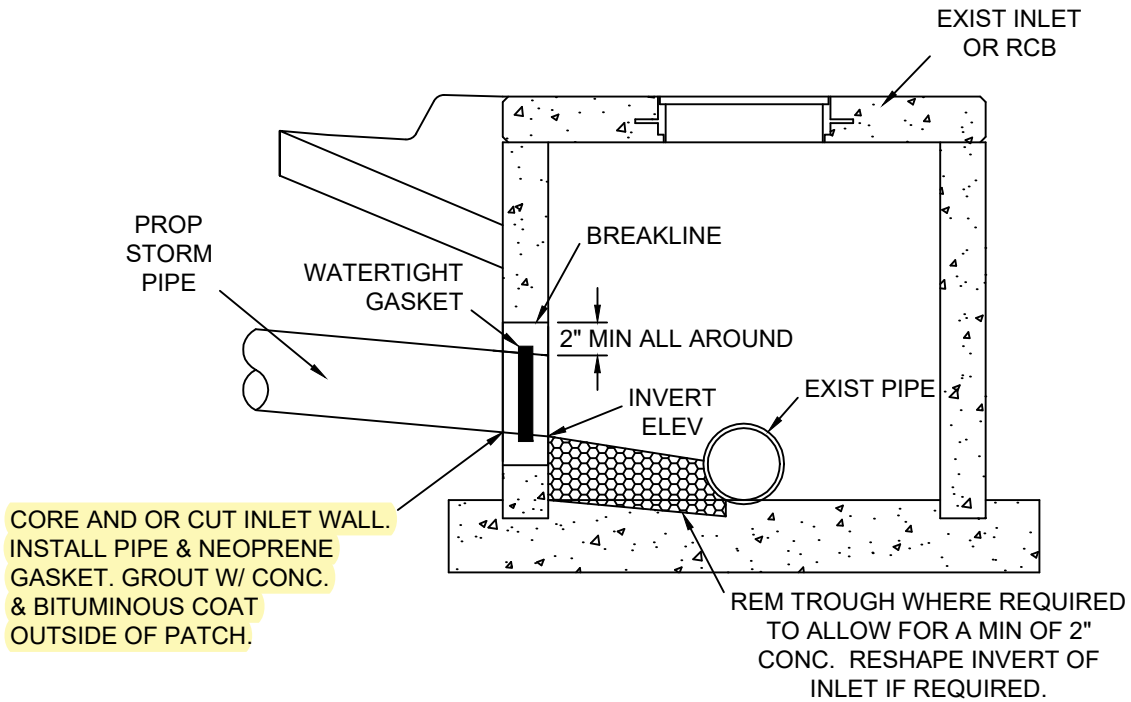
1. BARRIER MATERIAL SHALL BE CLAY SOIL MEETING CLASSIFICATION GC, SL, CL, OR ML-CL OR PORTLAND CEMENT CONCRETE.
2. A BENTONITE/CLAY SOIL MIXTURE BARRIER MATERIAL MAY BE UTILIZED IN THE EVENT THAT ADEQUATE CLAY SOIL MIXTURE IS NOT READILY AVAILABLE OR IN AREAS THAT DISPLAY EXCESSIVE GROUNDWATER CONDITIONS, AS DIRECTED BY THE ENGINEER.
3. THE BENTONITE CLAY GROUT SHALL CONTAIN A MINIMUM OF 10% BENTONITE BY WEIGHT (MAXIMUM OF 20% BENTONITE).

**TRENCH GROUNDWATER BARRIER SPACING**

4. GROUNDWATER BARRIER SHALL BE INSTALLED 20 FEET UPSTREAM OF EACH MANHOLE FOR GRAVITY LINES AND INSTALLED AT INTERVALS NOT TO EXCEED 400 FEET FOR PRESSURE LINES.
5. GROUNDWATER BARRIER SHALL BE INSTALLED 15 FEET DOWNSTREAM OF EVERY DRAINAGEWAY CROSSING.
6. EXCAVATED TRENCH BOTTOM SHALL BE UNIFORM FOR ENTIRE WIDTH & LENGTH PRIOR TO INSTALLING BARRIER MATERIAL.
7. SOIL SHALL BE COMPACTED TO 95 PERCENT OF MAXIMUM DENSITY.

**SAN-26**

CITY OF <i>Joplin</i>	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT <b>TRENCH GROUNDWATER          BARRIR DETAIL</b>
	PUBLIC WORKS DEPT	DATE: 4/2021	
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: SAN - 26	



EXIST INLET OR  
RCB CONNECTION

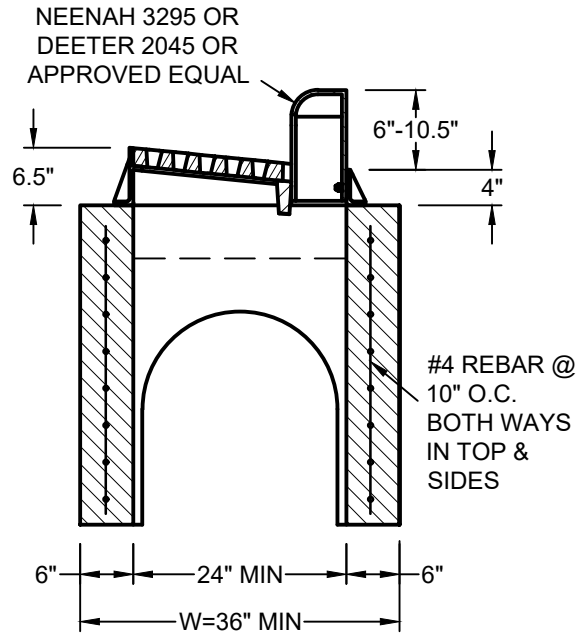
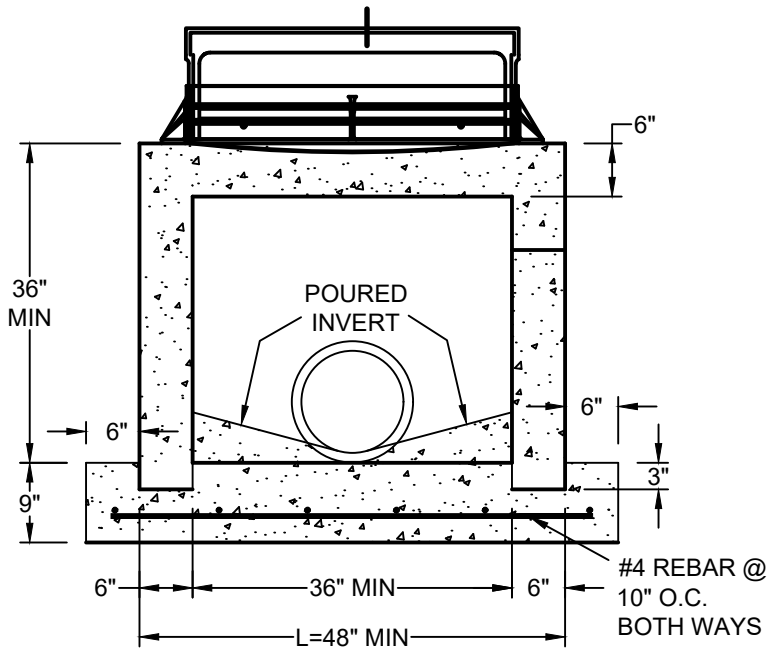
N.T.S.

STM-01



CITY OF JOPLIN, MO	CKD BY: JOHNSON
PUBLIC WORKS DEPT	DATE: 10/2021
ENGINEERING DIVISION	ENGINEER: HERTZBERG
602 S MAIN ST 64801	FILE: INLETTAP

PROJECT  
**EXIST INLET OR  
RCB CONNECTION**

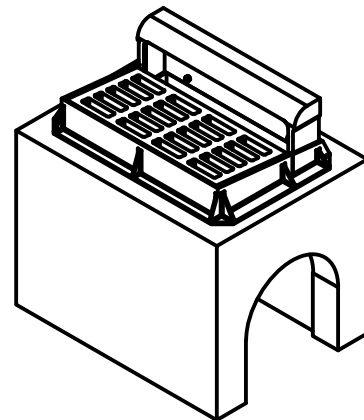
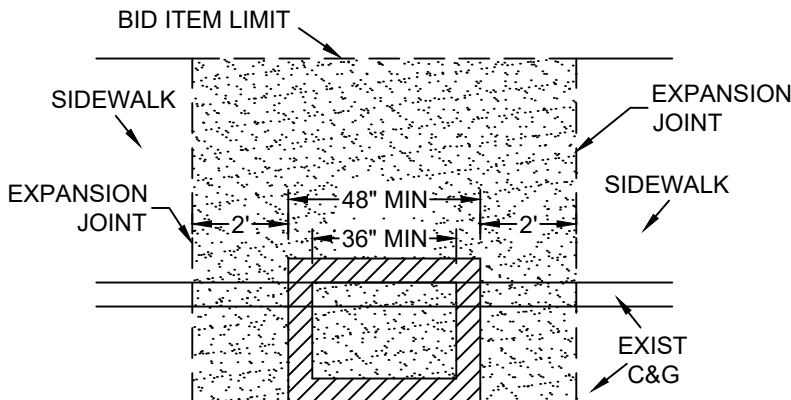


# SINGLE PRE-CAST TYPE 'A' CATCH BASIN

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 & REPLACE 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.
10. BEDDING SHALL BE IN ACCORDANCE WITH CITY OF JOPLIN STANDARD SPECIFICATIONS SECTION 4400.3.4

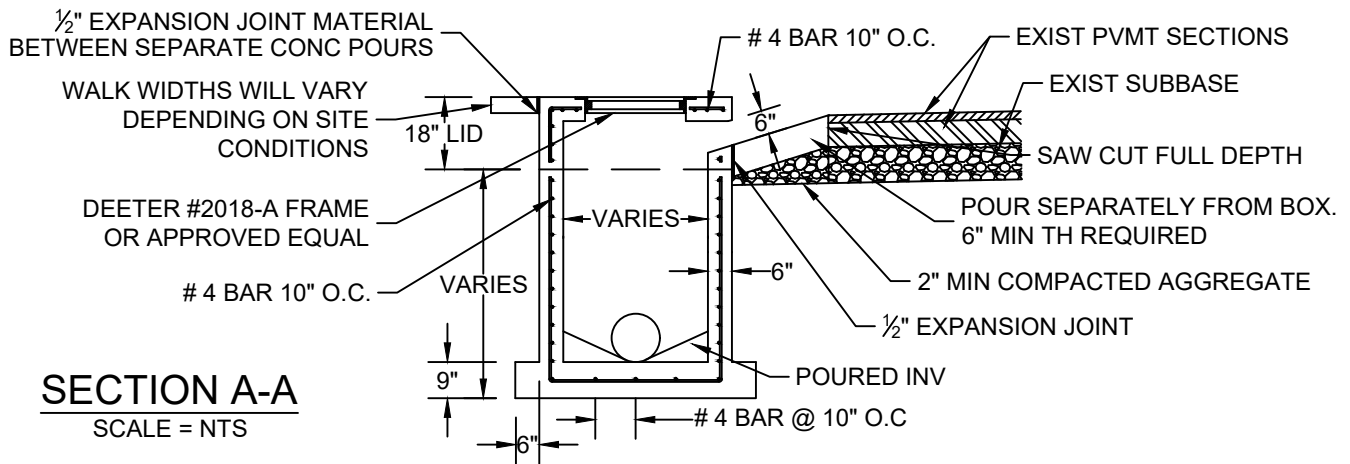


STM-02



CITY OF JOPLIN, MO	CKD BY: JOHNSON
PUBLIC WORKS DEPT	DATE: 10/2021
ENGINEERING DIVISION	ENGINEER: HERTZBERG
602 S MAIN ST 64801	FILE: TYPEACATCHBASIN

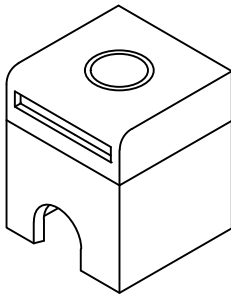
PROJECT  
**TYPE 'A'  
CATCH BASIN**



**SECTION A-A**  
SCALE = NTS

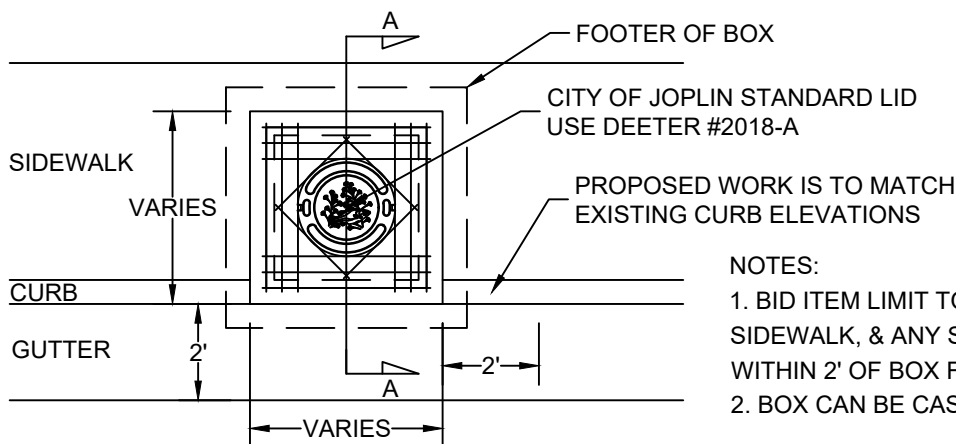
**TYPE 'C'**  
**CURB INLET**

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.
10. BEDDING SHALL BE IN ACCORDANCE WITH CITY OF JOPLIN STANDARD SPECIFICATIONS SECTION 4400.3.4



**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

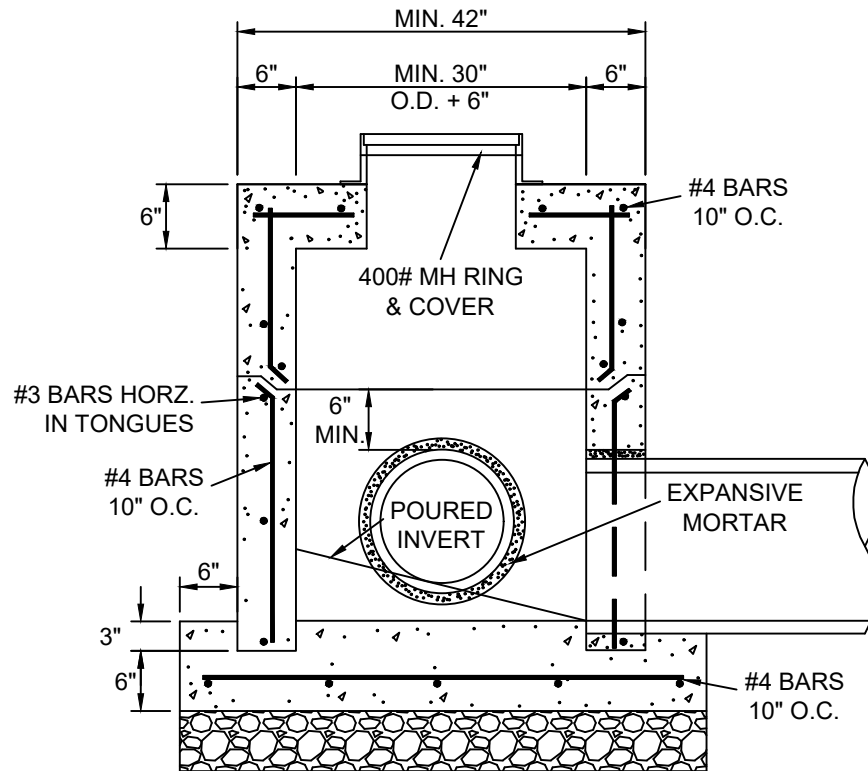


CITY OF JOPLIN, MO  
PUBLIC WORKS DEPT  
ENGINEERING DIVISION  
602 S MAIN ST 64801

CKD BY: JOHNSON  
DATE: 10/2021  
ENGINEER: HERTZBERG  
FILE: TYPECCB

PROJECT  
**TYPE 'C'**  
**CURB INLET**





**CONC JNCT BOX W/  
MH RING & COVER**

N.T.S.

**NOTES:**

- BEDDING SHALL BE IN ACCORDANCE WITH CITY OF JOPLIN STANDARD SPECIFICATIONS SECTION 4400.3.4

STM-05



CITY OF JOPLIN, MO	CKD BY: JOHNSON
PUBLIC WORKS DEPT	DATE: 10/2021
ENGINEERING DIVISION	ENGINEER: HERTZBERG
602 S MAIN ST 64801	FILE: MHBOX

PROJECT  
**CONC JUNCTION BOX  
W/ MH RING & COVER**

LID TO BE DEETER  
1258-A OR EQUIVALENT  
WITH CITY OF JOPLIN  
STENCILING (155#)

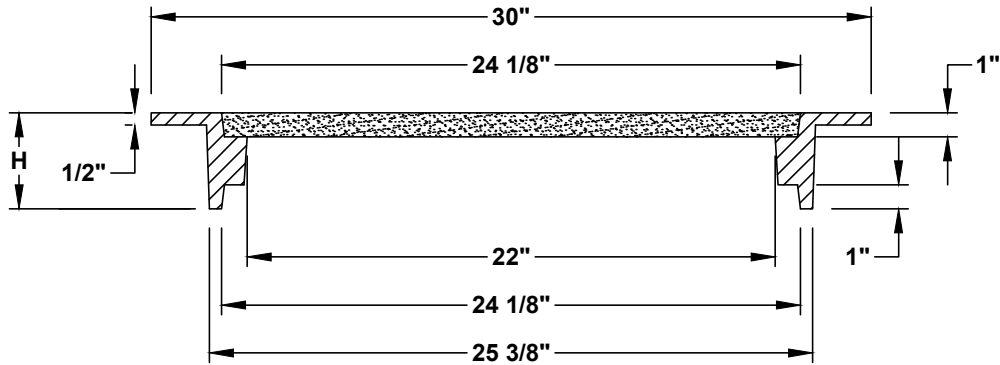


RING TO BE REVERSIBLE  
DEETER 1157 OR  
EQUIVALENT (116#)

2 CONCEALED  
PICKSLOTS

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

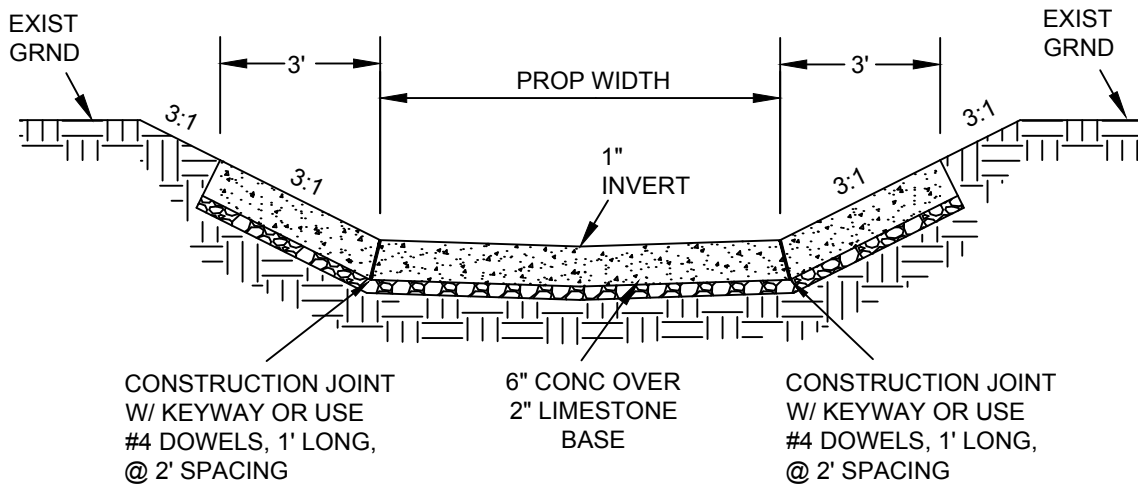


CITY OF JOPLIN, MO	CKD BY: JOHNSON
PUBLIC WORKS DEPT	DATE: 2/2019
ENGINEERING DIVISION	ENGINEER: HERTZBERG
602 S MAIN ST 64801	FILE: STM LID

PROJECT  
**STANDARD STORM  
SEWER RING & COVER**

# TYPICAL SECTION

NTS



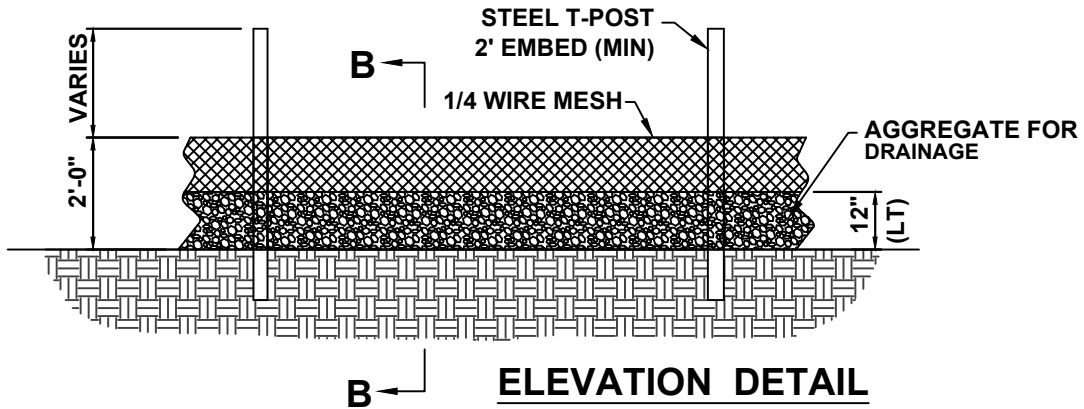
CONSTRUCT 6" X 18" CONCRETE TOE WALL  
AT START & END OF DITCH & ALSO EVERY 100'

STM-07



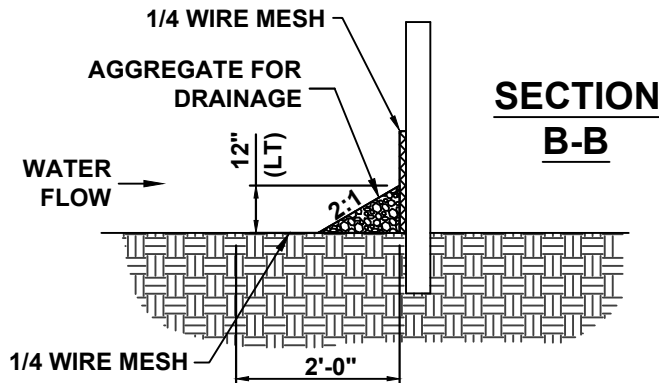
CITY OF JOPLIN, MO	CKD BY: JOHNSON
PUBLIC WORKS DEPT	DATE: 2/2019
ENGINEERING DIVISION	ENGINEER: HERTZBERG
602 S MAIN ST 64801	FILE: CONCDITCH

PROJECT  
**CONC DITCH  
W/ INVERT**



**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.



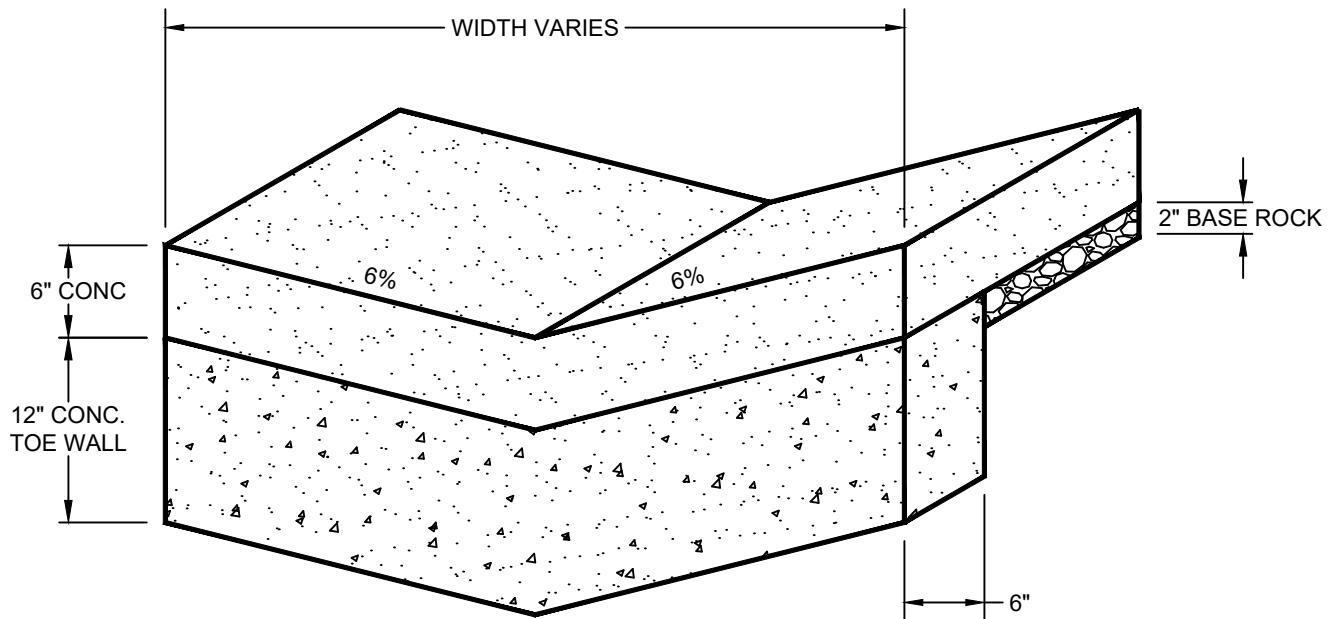
**ROCK/MESH SEDIMENT CONTROL FENCE**

STM-08



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

PROJECT  
**ROCK/MESH SEDIMENT  
CONTROL FENCE**



## TRICKLE CHANNEL

NTS

**NOTES:**

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

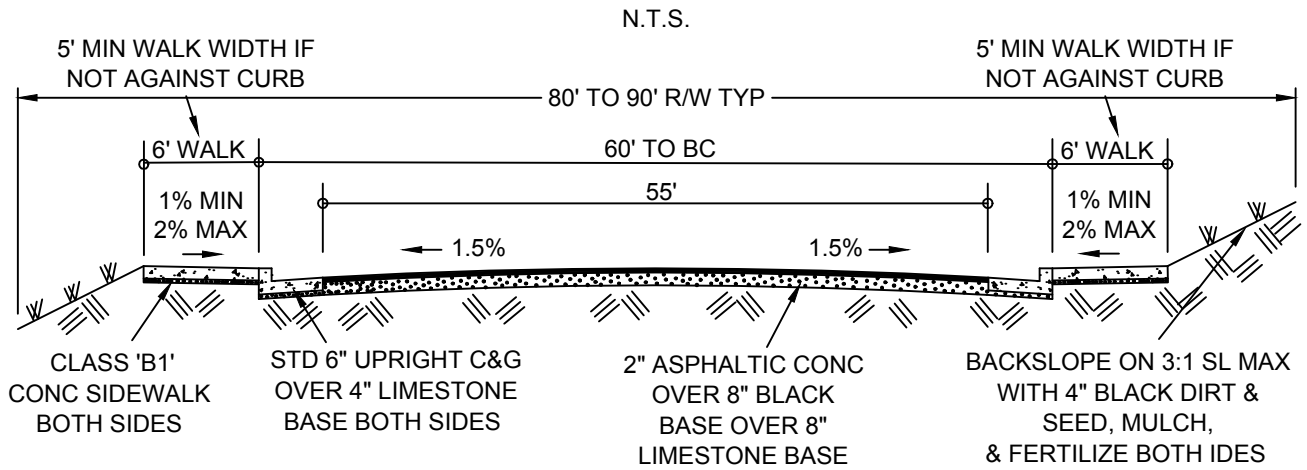
STM-09

CITY OF **Joplin**

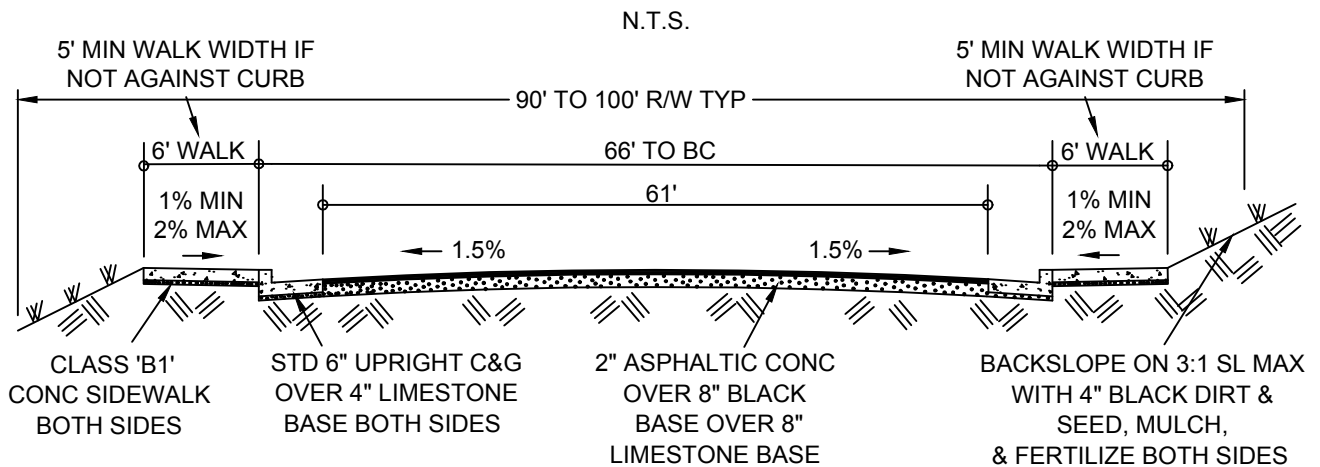
CITY OF JOPLIN, MO	CKD BY: JOHNSON
PUBLIC WORKS DEPT	DATE: 10/2020
ENGINEERING DIVISION	ENGINEER: HERTZBERG
602 S MAIN ST 64801	FILE: TRICKLE CHANNEL

PROJECT  
**CONC. TRICKLE  
CHANNEL DETAIL**

## TYPICAL SECTION 5 LANE ARTERIAL W/ NO BIKE LANES



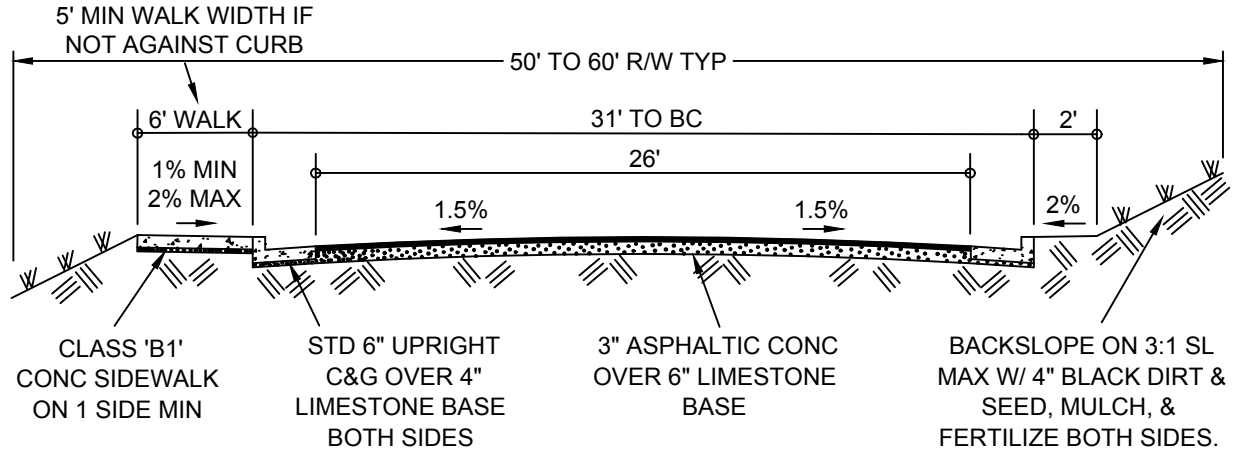
## TYPICAL SECTION 5 LANE ARTERIAL W/ BIKE LANES



ST-01

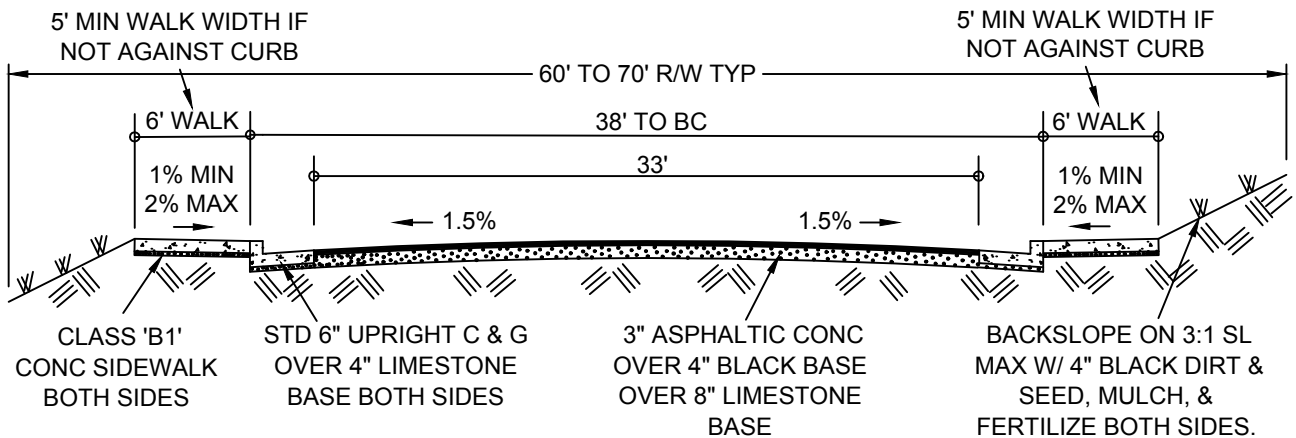
## TYPICAL SECTION 2 LANE W/ NO BIKE LANES

N.T.S.



## TYPICAL SECTION 3 LANE COLLECTOR W/ NO BIKE LANES

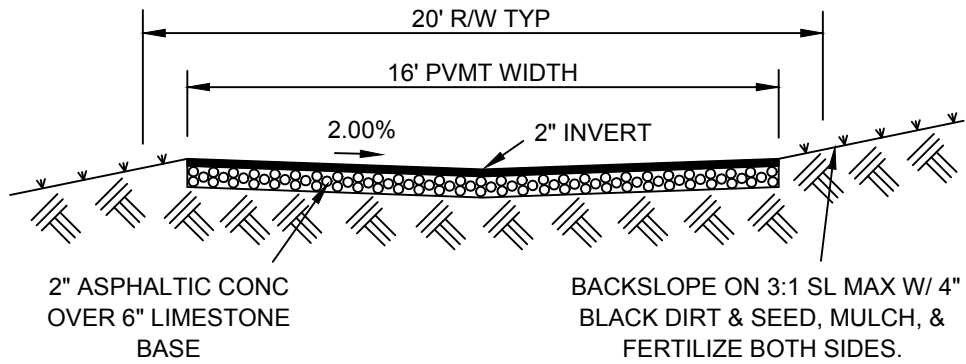
N.T.S.



ST-02

# TYPICAL SECTION

N.T.S.



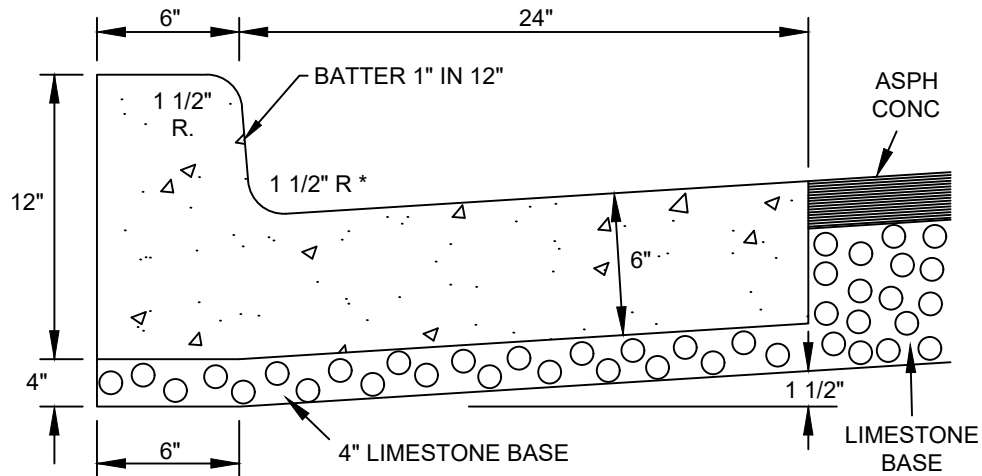
ST-03



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

PROJECT  
**TYPICAL SECTION  
RESIDENTIAL ALLEY**

\* = OPTIONAL WITH APPROVAL BY CITY ENGINEER.



NOTES:

1. CONSTRUCT EXPANSION JOINTS AT THE START & END OF CURB INLETS.
2. CONSTRUCT CONTRACTION JOINTS EVERY 12.5' 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' WITH FIBER REINFORCEMENT.

STD UPRIGHT C & G

N.T.S.

ST-04



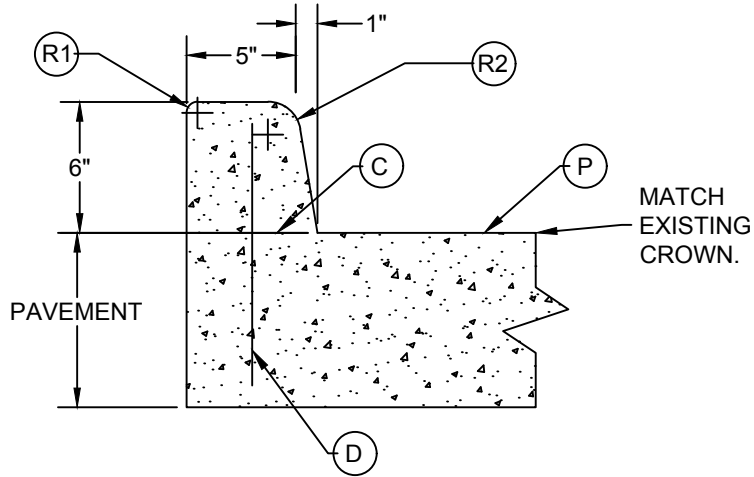
CITY OF JOPLIN, MO	CKD BY: JOHNSON
PUBLIC WORKS DEPT	DATE: 12/2020
ENGINEERING DIVISION	ENGINEER: HERTZBERG
602 S MAIN ST 64801	FILE: CURBDET

PROJECT  
**STD UPRIGHT  
 CURB & GUTTER**

LEGEND:

- (C) PERMISSIBLE CONSTRUCTION JOINT. IF CONSTRUCTED IN THIS MANNER TIE BARS MUST BE USED.
- (D) #4 TIE BAR AT 24" CENTERS. LENGTH OF THE TIE BARS EQUALS THICKNESS OF PAVEMENT PLUS HEIGHT OF CURB, LESS 3".
- (P) TOP OF PAVEMENT OR CONCRETE BASE.
- (R1) ROUND TO 1/2" RADIUS. (EXCEPT FOR SAWED JOINTS)
- (R2) ROUND TO 1 1/2" RADIUS.

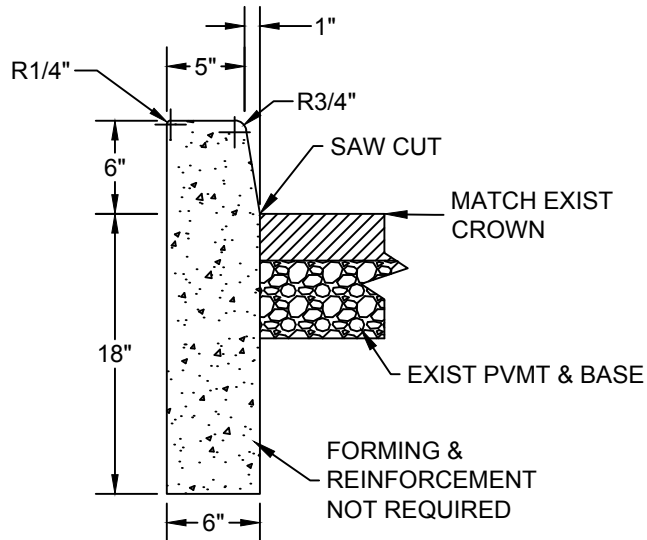
**TYPE A  
INTEGRAL CURB**  
NOT TO SCALE



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

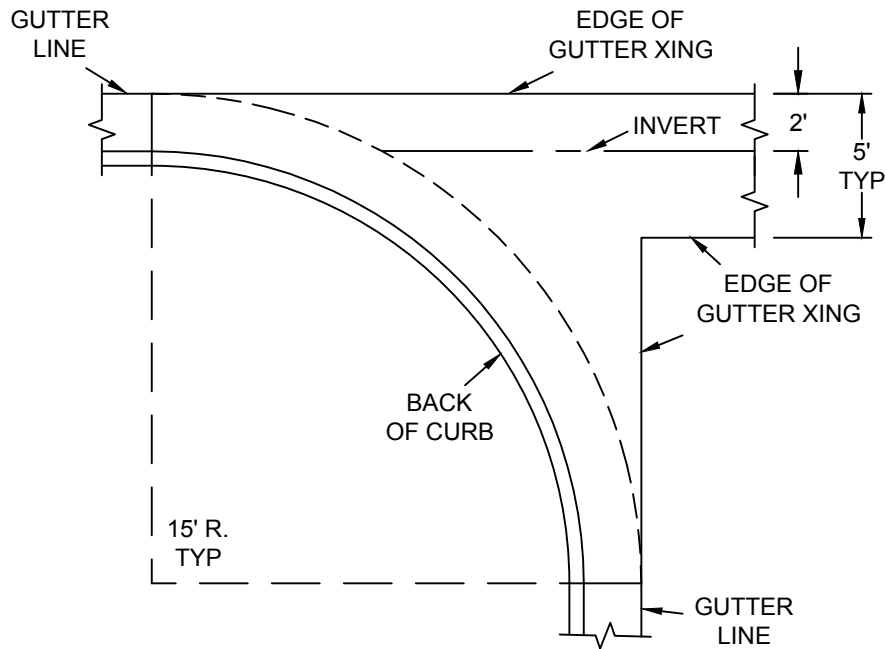


ST-05



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

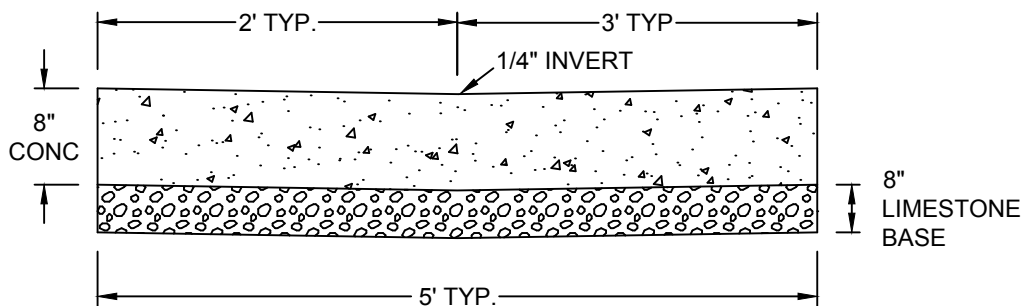
PROJECT  
**TYPE "A" & TYPE "S" CURB**



**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.

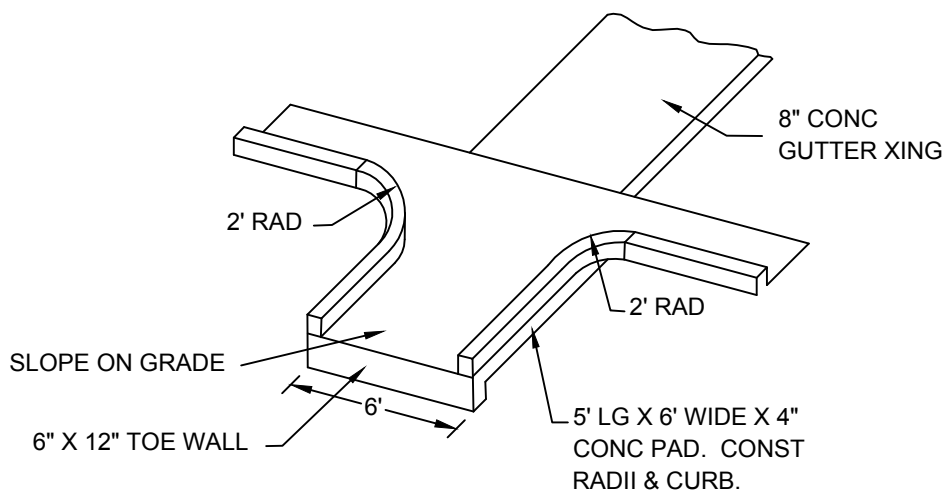
ST-06



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

CKD BY: JOHNSON  
DATE: 10/2020  
ENGINEER: HERTZBERG  
FILE: GUTTERXING

PROJECT  
**CONC  
GUTTER XING**



**FLUME DETAIL**

N.T.S.

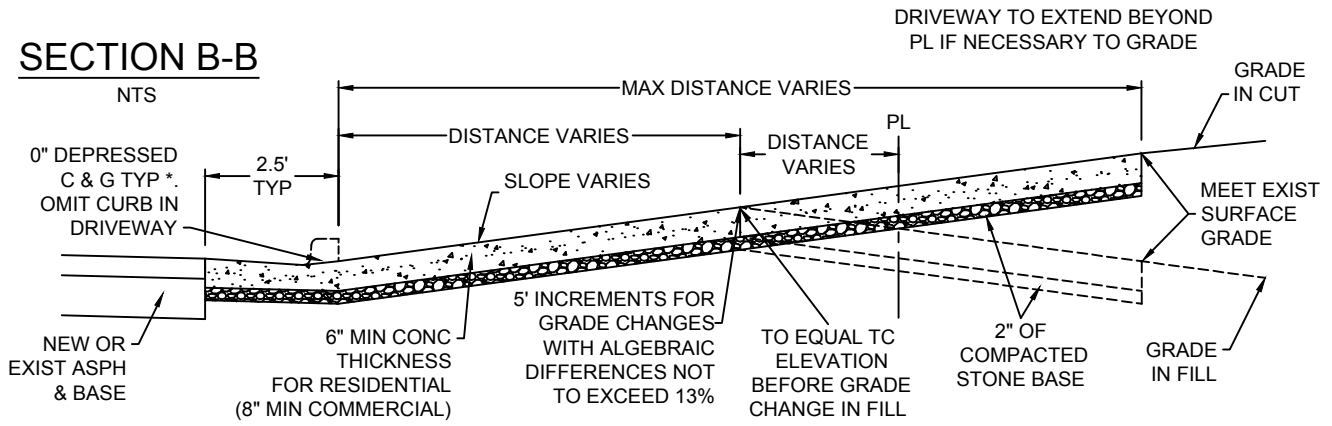
ST-07



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

PROJECT  
**CONCRETE FLUME**

# SECTION B-B

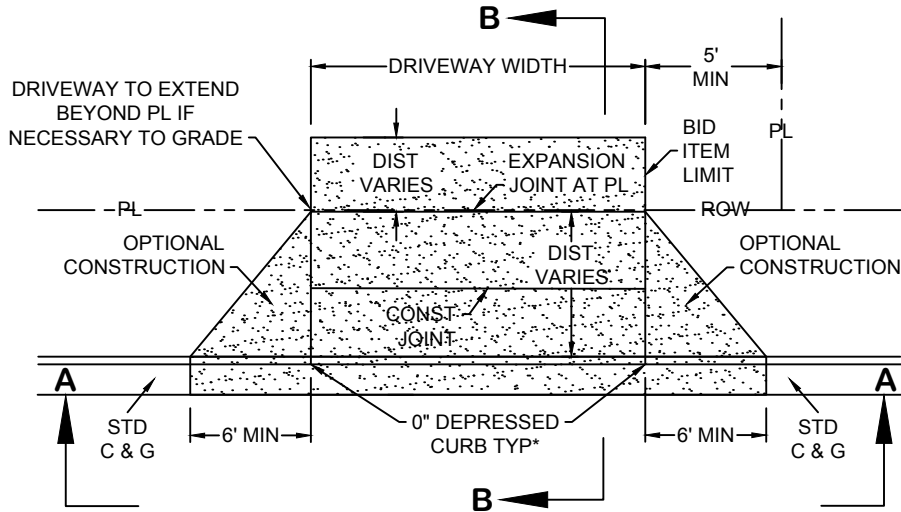


**NOTES:**

1. **FIBER REINFORCEMENT REQUIRED.**
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.

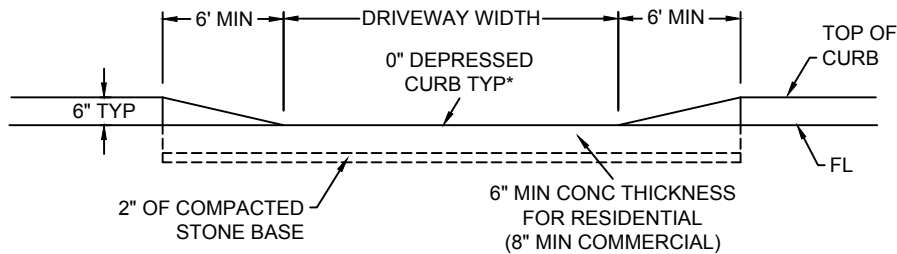
## PLAN VIEW

NTS



## SECTION A-A

NTS



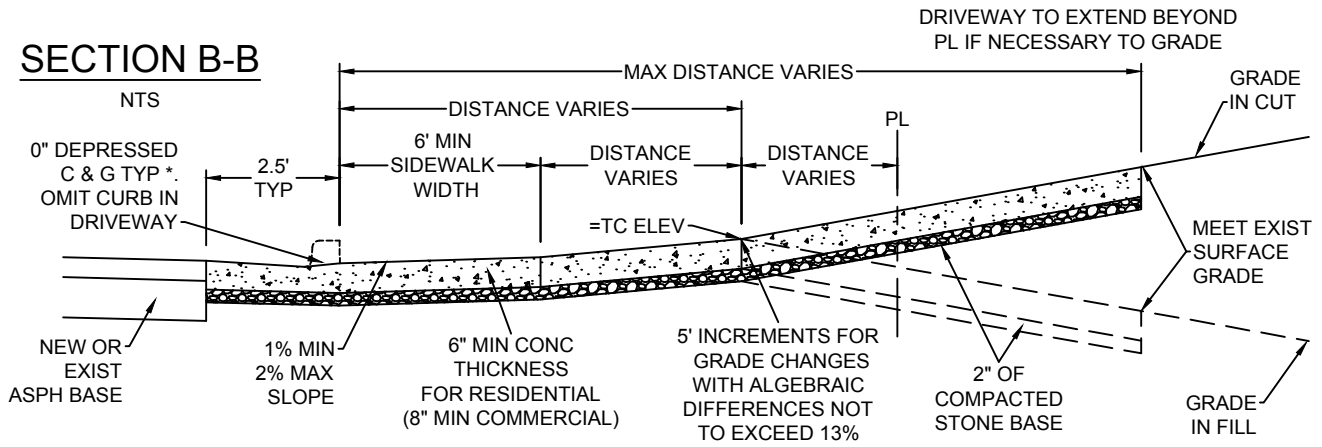
ST-08



CITY OF JOPLIN, 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**

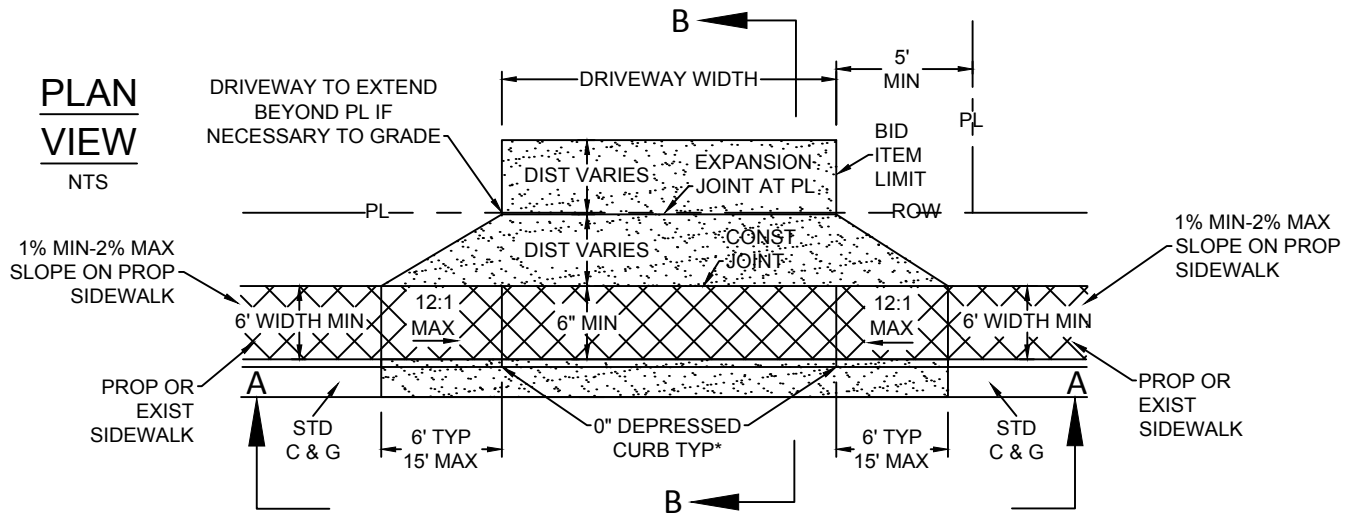
# SECTION B-B



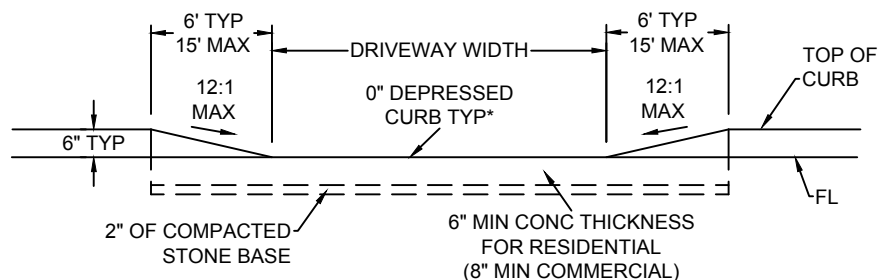
**NOTES:**

1. **FIBER REINFORCEMENT REQUIRED.**
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



## SECTION A-A



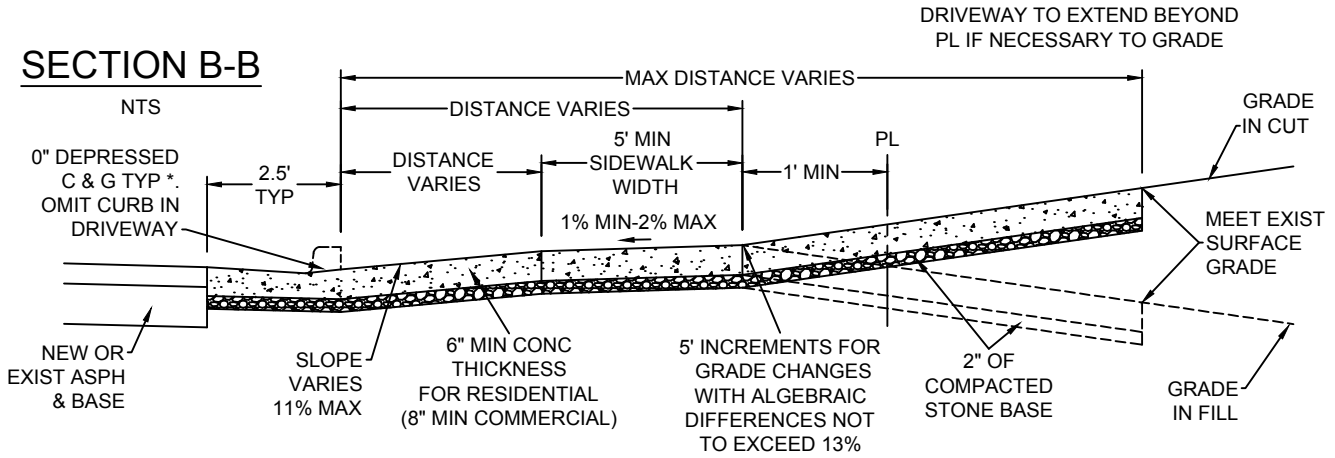
ST-09



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**

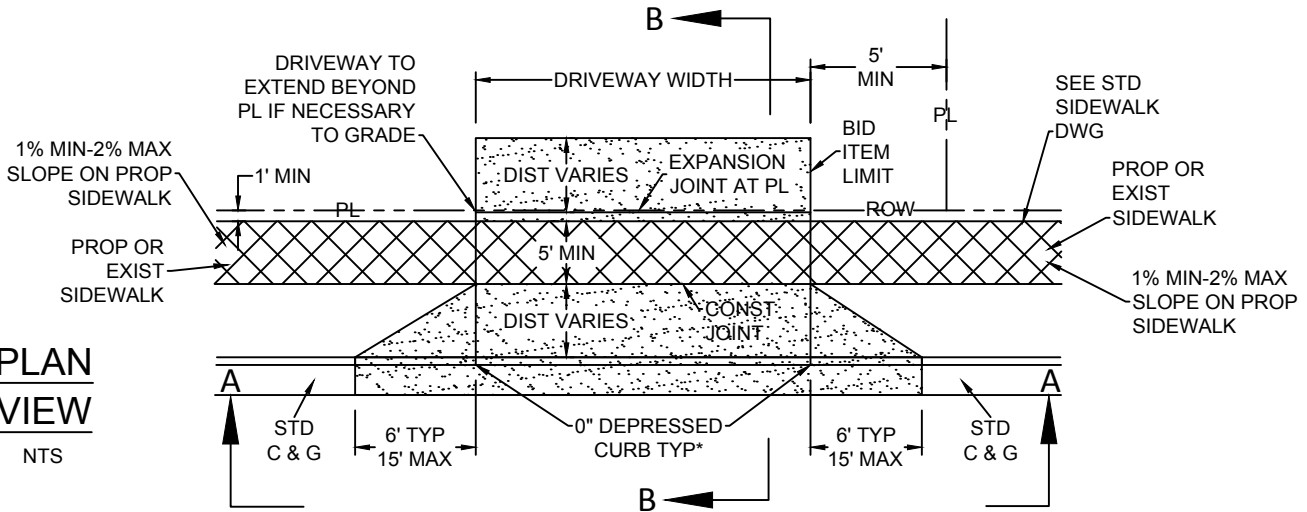
# SECTION B-B



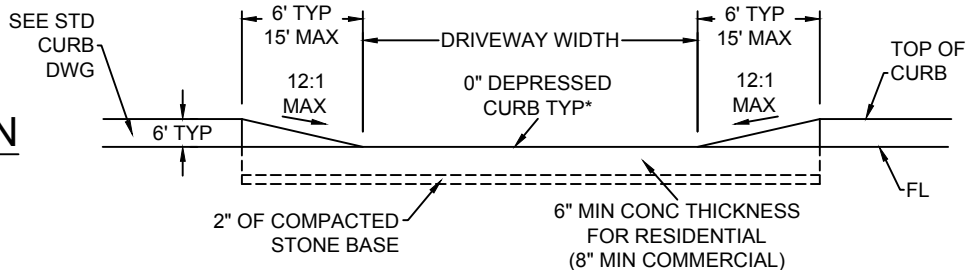
NOTES:

- FIBER REINFORCEMENT REQUIRED.**
- ALL GUTTER CONST IN FRONT OF DRIVEWAY & ALL C & G IN DRIVEWAY TRANSITIONS SHALL BE INCLUDED IN THE BID PRICE OF THE DRIVEWAY.
- BID PRICE FOR ALL DRIVEWAYS SHALL INCLUDE ALL EXCAVATION, LABOR, & MATERIALS REQUIRED TO CONSTRUCT DRIVEWAY.
- \* = 1.5" DEPRESSED CURB (CHAMFERED) ALLOWED WHEN NEEDED FOR DRAINAGE OR SIDEWALK GRADE.
- 5' INCREMENTS FOR GRADE CHANGES IN DRIVEWAY ARE ALLOWED TO MEET EXIST GRADE.
- ALGEBRAIC DIFFERENCE AT GRADE CHANGES ARE NOT TO EXCEED 13%.
- EXPANSION JOINTS SHALL BE CONSTRUCTED NEAR PROPERTY LINE & THROUGH C & G ADJACENT TO DRIVEWAY.
- OPTIONAL CONSTRUCTION JOINTS MAY BE USED AT GRADE CHANGES IN DRIVEWAY.
- RAMPS NOT TO EXCEED 30" VERTICALLY WITHOUT 5' X5' LANDING.

# PLAN VIEW



# SECTION A-A

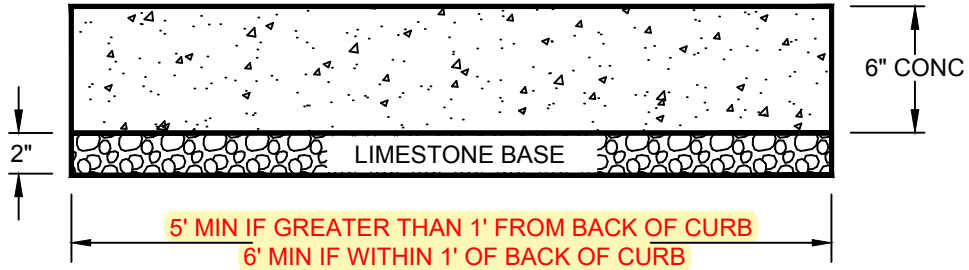


ST-10



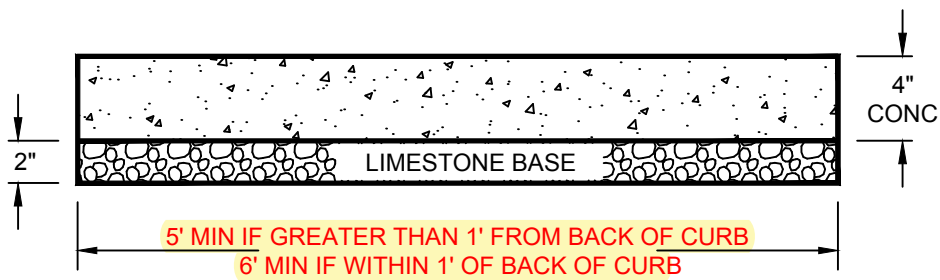
CITY OF JOPLIN, MO	CKD BY: JOHNSON
PUBLIC WORKS DEPT	DATE: 2/2019
ENGINEERING DIVISION	ENGINEER: HERTZBERG
602 S MAIN ST 64801	FILE: TYPECDRIVE

PROJECT  
**TYPE C DRIVEWAY WITH  
 SIDEWALK OFFSET FROM CURB**



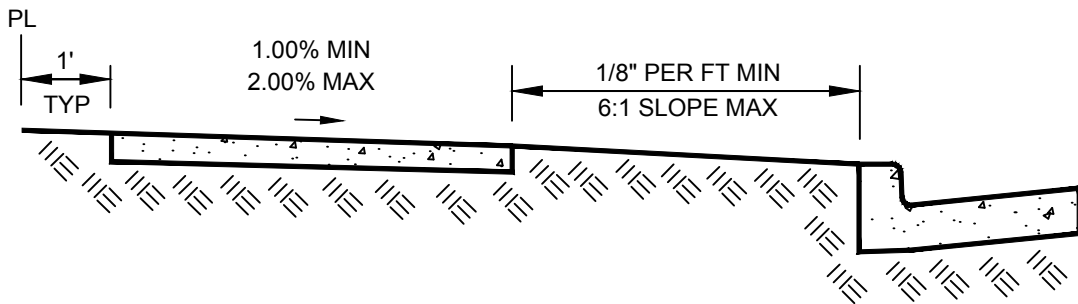
**CLASS 'A' CONC**  
**SIDEWALK**

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



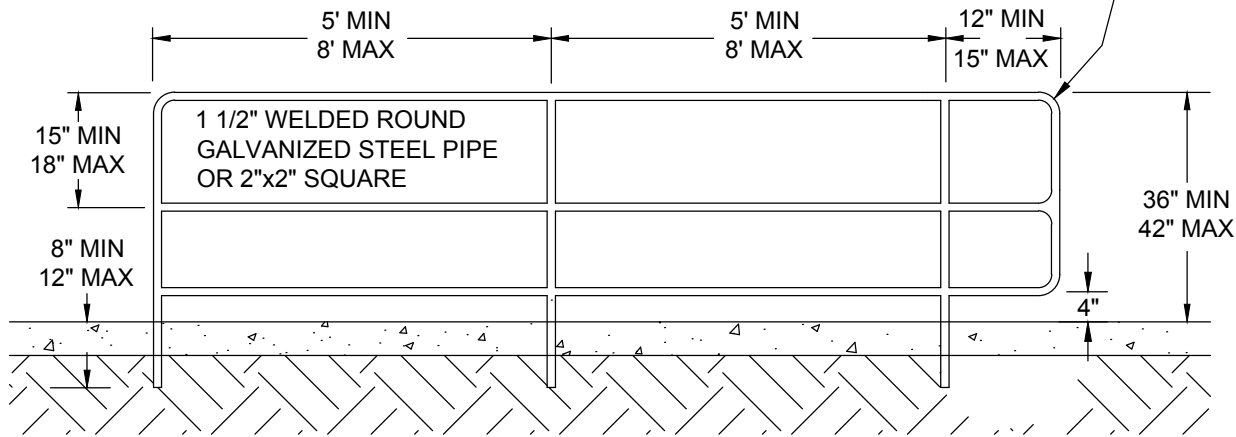
CITY OF JOPLIN, MO	CKD BY: JOHNSON
PUBLIC WORKS DEPT	DATE: 10/2020
ENGINEERING DIVISION	ENGINEER: HERTZBERG
602 S MAIN ST 64801	FILE: SIDEWALK

PROJECT  
**CONC**  
**SIDEWALK DETAILS**

# HANDRAIL DETAIL

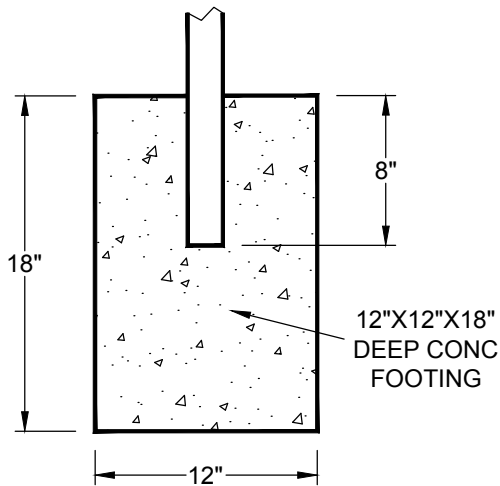
N.T.S.

HANDRAIL EXTENSIONS  
TYP AT BEGINNING &  
END OF RAMP



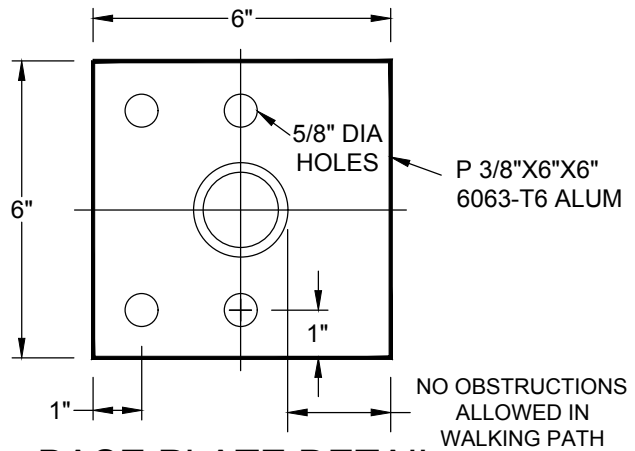
SEE MODOT STD. 608.20E FOR ADDITIONAL DETAILS

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



## CONC FOOTING DETAIL

N.T.S.



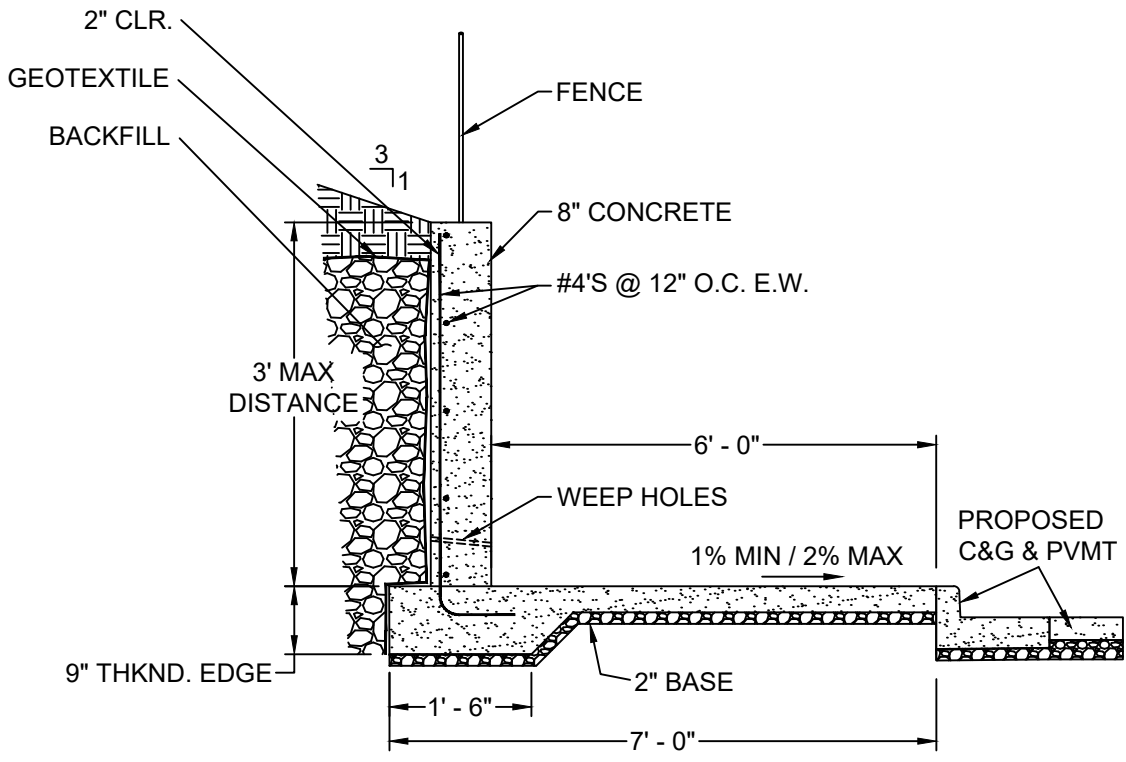
## BASE PLATE DETAIL

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



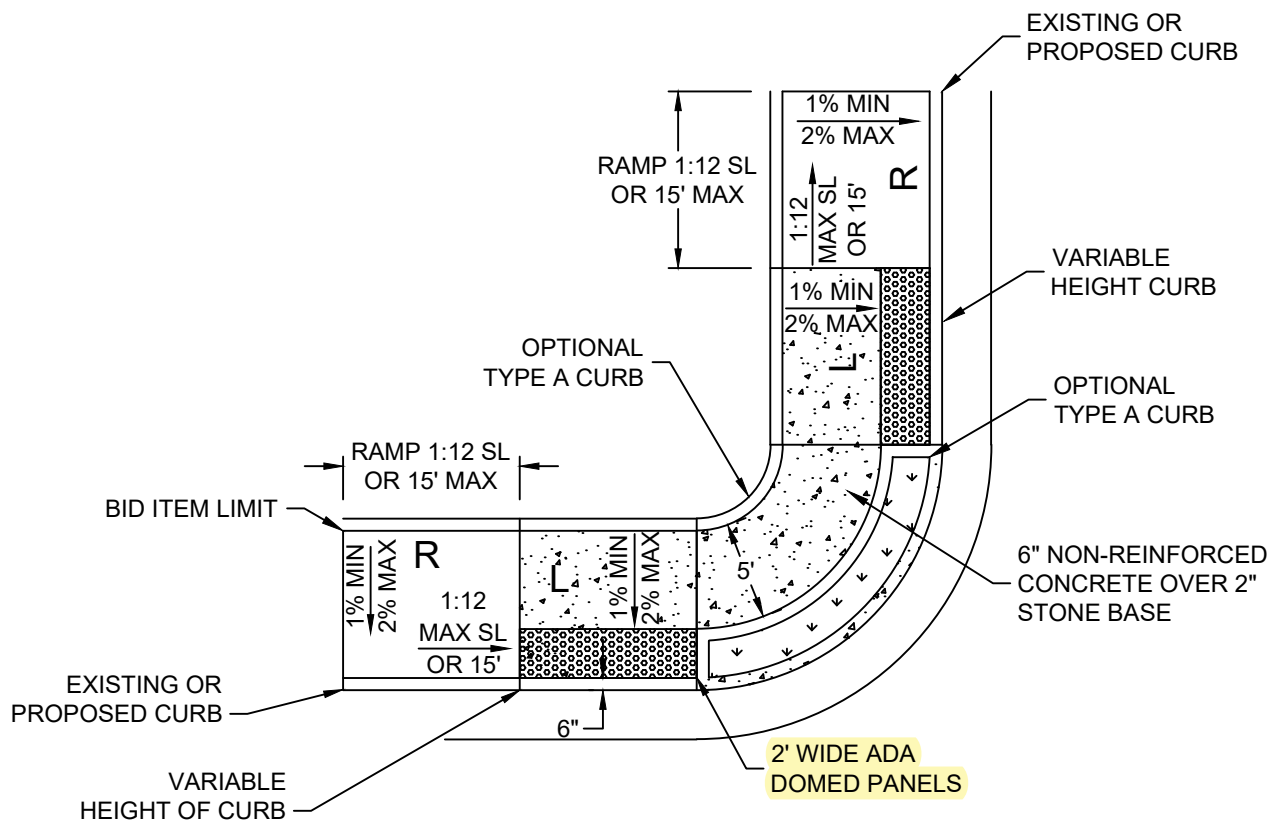
**POURED CONCRETE SIDEWALK WALL**  
NTS

**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 1/2" 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 <i>Joplin</i>	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT <b>POURED CONCRETE          SIDEWALK WALL</b>
	PUBLIC WORKS DEPT	DATE: 10/2020	
	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 (THIS INCLUDES TRUNCATED DOMES).
3. ALL POURED CONCRETE SHALL BE FIBER REINFORCED CLASS "B".
4. TYPE A CURB & ADA DOMED PAVERS SHALL BE INCLUDED IN PRICE OF RAMP.
5. 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**

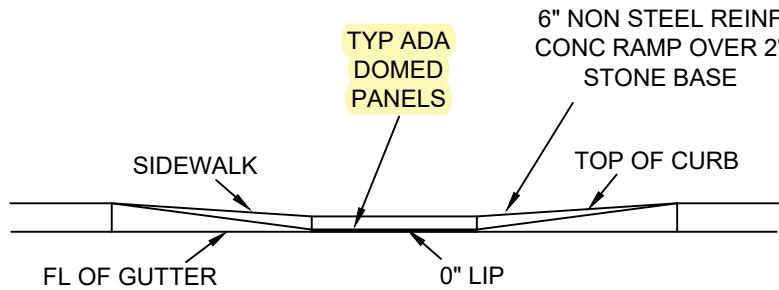
NOT TO SCALE

ST-14

CITY OF <b>Joplin</b> 	CITY OF JOPLIN, MO	CKD BY: JOHNSON	PROJECT <b>TYPE "A" ADA RAMP</b>
	PUBLIC WORKS DEPT	DATE: 10/2021	
	ENGINEERING DIVISION	ENGINEER: HERTZBERG	
	602 S MAIN ST 64801	FILE: TYPE A ADA RAMP	

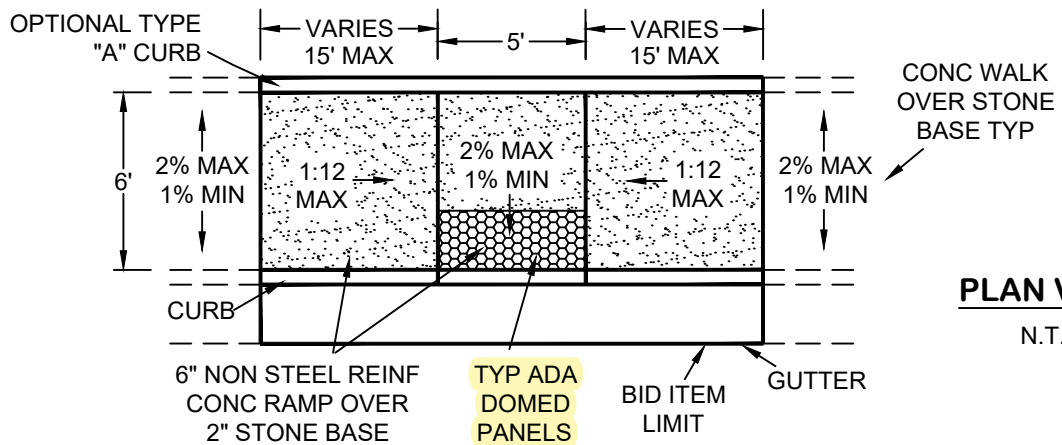
NOTES:

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 (THIS INCLUDES TRUNCATED DOMES).
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

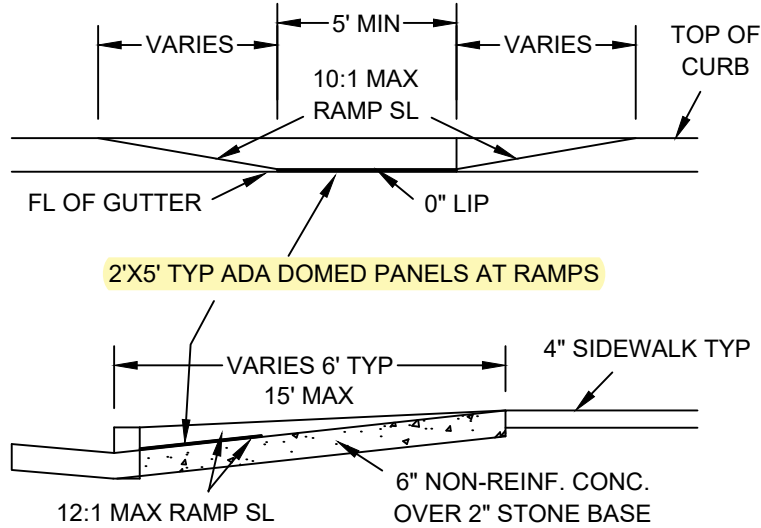


CITY OF JOPLIN, MO	CKD BY: JOHNSON
PUBLIC WORKS DEPT	DATE: 10/2021
ENGINEERING DIVISION	ENGINEER: HERTZBERG
602 S MAIN ST 64801	FILE: TYPEBADARAMP

PROJECT  
**TYPE 'B'**  
**ADA RAMP**

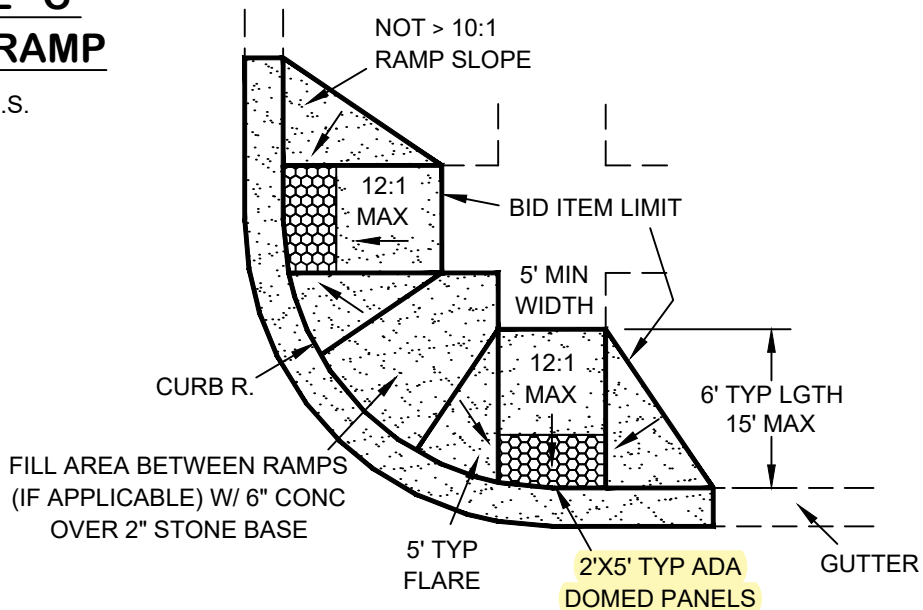
NOTES:

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 (THIS INCLUDES TRUNCATED DOMES).
3. ALL Poured CONC SHALL BE CLASS 'B' FIBER REINFORCED.
4. RAMPS SHALL NOT EXCEED 30" VERTICALLY WITHOUT 5' X 5' LANDING.



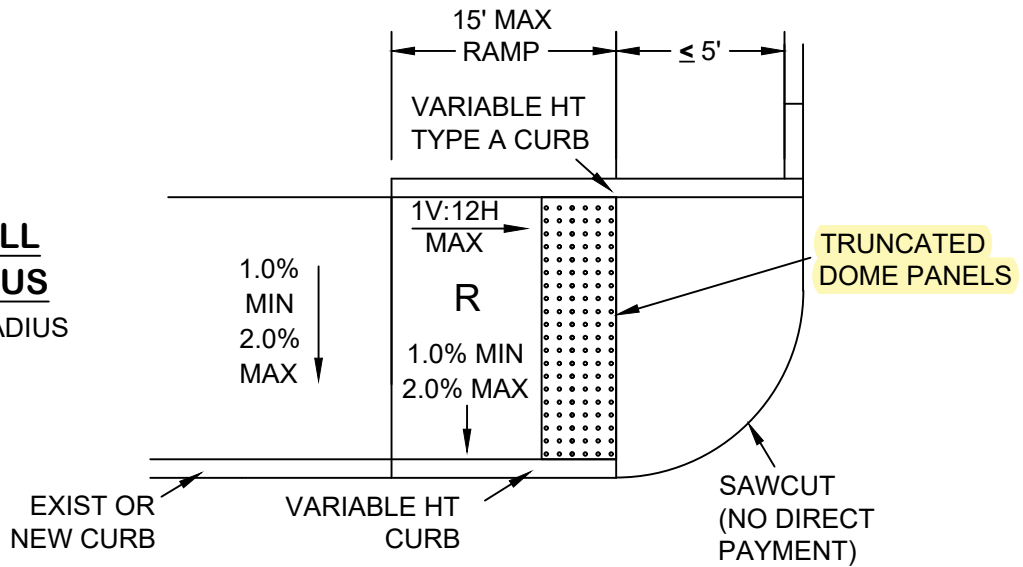
**TYPE 'C'  
ADA RAMP**

N.T.S.



ST-16

**SMALL  
RADIUS**  
< 15' RADIUS



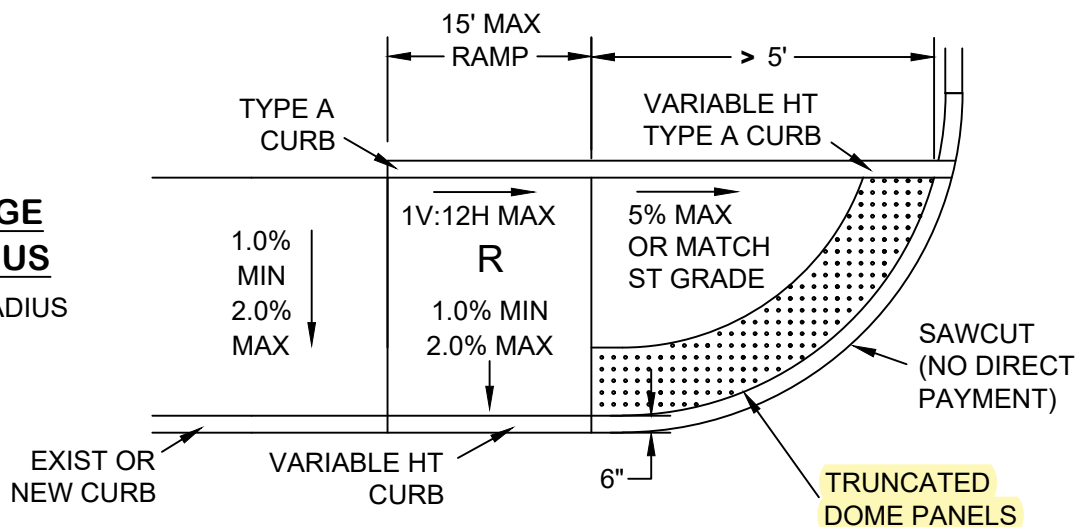
**NOTES:**

1. BID PRICE (PAID BY SY) FOR ALL RAMPS SHALL INCLUDE ALL EXCAVATION, LABOR, & MATERIALS REQUIRED TO CONSTRUCT RAMP (THIS INCLUDES TRUNCATED DOME PANELS).
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.
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.

**TYPE 'D'  
ADA RAMP**

N.T.S.

**LARGE  
RADIUS**  
≥ 15' RADIUS



ST-17

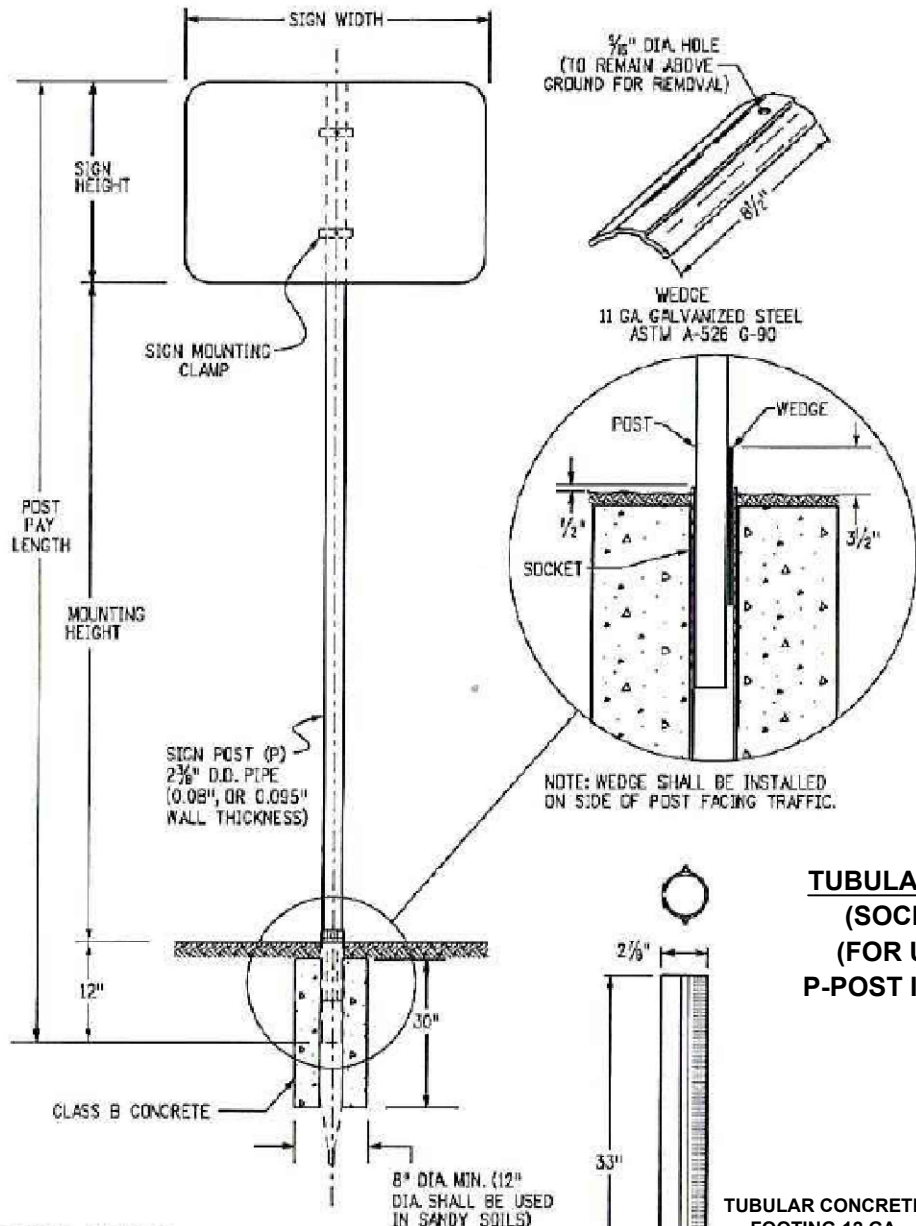


CITY OF JOPLIN, MO  
PUBLIC WORKS DEPT  
ENGINEERING DIVISION  
602 S MAIN ST 64801

CKD BY: JOHNSON  
DATE: 10/2021  
ENGINEER: HERTZBERG  
FILE: TYPEDADARAMP

PROJECT

**TYPE 'D' ADA RAMP**



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

**POST NOTES**

THE POST MAY BE PRE-PUNCHED WITH 3/8" 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, 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 WIDTH (FT)									
		1	2	2.5	3	4	5	6	7	8	9
SIGN HEIGHT (FT)	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				
	6	SIZES NOT USED		P1	P1	P1	*P2	TWO P2'S			
7	SIZES NOT USED		P1	P1	*P2	TWO P1'S	TWO P2'S				

\* SEE CHART NOTE 4

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

\* SEE CHART NOTE 4

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

\* SEE CHART NOTE 4



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 2

PROJECT  
**SIGN SUPPORT &  
INSTALLATION DETAILS**