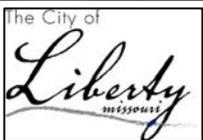


REV 2009



CITY OF LIBERTY, MO
DEPARTMENT OF
PUBLIC WORKS

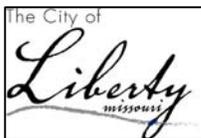
STANDARD
CURB INLET

D41-1
1 OF 2

NOTES:

1. CONTRACTOR SHALL PROVIDE STEPS SPACED AT 1'-4" O.C. WHERE INLET OR MANHOLE DEPTH IS GREATER THAN 4'. STEPS SHALL BE M.A. INDUSTRIES, INC. MODEL PS-2-PF OR APPROVED EQUAL.
2. USE OF PRECAST CONCRETE REQUIRES CITY ENGINEER'S APPROVAL OF SHOP DRAWINGS.
3. MANHOLE RING AND LID SHALL BE CLAY & BAILEY NO. 2020, DEETER 2016 (185 LBS.) OR AN APPROVED EQUAL.
4. SPACER SHALL BE PLACED AT EQUAL INTERVALS ACCORDING TO THE FOLLOWING: L=4', 2 SPACES; L=5', 2 SPACES; L=6', 2 SPACES; L=7', 2 SPACES; L=8', 3 SPACES; L=10', 3 SPACES.
5. THE FIRST DIMENSION IN THE PLAN NOTATIONS REFERS TO THE "L" DIMENSION; I.E., TYPE VI DENOTES L=6'.
6. THE SECOND DIMENSION IN THE PLAN NOTATIONS REFERS TO THE "W" DIMENSION.
7. "JUNCTION BOX" AS CALLED FOR IN THE PLANS, SHALL BE CONSTRUCTED TO CONFORM, WHERE APPLICABLE, WITH THE DIMENSIONS, THICKNESSES AND DETAILS SHOWN.
8. ALL METAL SURFACES, AFTER BEING CLEANED OF ALL DUST, MILL SCALE AND WELD SCALE SHALL BE GALVANISED.
9. CURB CONTRACTOR SHALL HAND FORM AND FINISH GUTTER WITHIN THE INLET THROAT TO THE REAR OF FRONT INLET WALL AT THE TIME THE FINISHING OF NORMAL CURB IS ACCOMPLISHED.
10. USE CLASS I 3000 PSI CONCRETE FOR ALL STANDARD CATCH BASIN AND INLET INVERTS.
11. THE INVERT SHALL HAVE A TROWEL FINISH TO SECURE SMOOTH INVERT SLOPING TO OUTLET PIPE.
12. OUTLET OR INLET PIPE SHALL BE PLACED AS SPECIFIED OR AS DIRECTED BY THE ENGINEER. REINFORCING STEEL SHALL BE BENT AROUND PIPE.
13. USE CLASS II 4000 PSI CONCRETE FOR ALL STANDARD CATCH BASINS AND INLETS.
14. INLET TOP SHALL INCLUDE STAMP CAST IN CONCRETE LID WHICH READS "NO DUMPING - DRAINS TO STREAM" PER D41-1B.
15. POINTS OF ATTACHMENT PROVIDED FOR LIFTING PRECAST TOPS SHALL NOT BE LOCATED ON THE TOP SIDE OF INLET COVER.
16. ACCESS COVER STAMPED "LIBERTY - STORM".

REV 2009

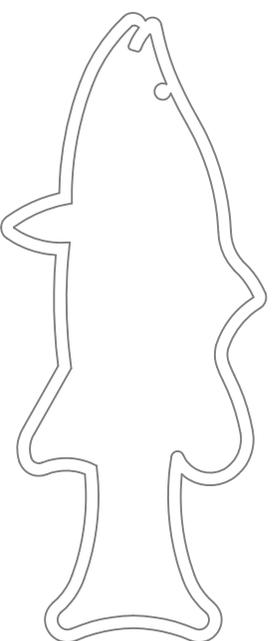


CITY OF LIBERTY, MO
DEPARTMENT OF
PUBLIC WORKS

STANDARD
CURB INLET

D41-1
2 OF 2

NO DUMPING



DRAINS TO STREAM

1'-2 1/4"

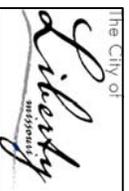
2'-6 5/8"

STAMP IMPRESSION

NOTE:
STAMP TO BE INCLUDED ON ALL STORM SEWER INLET TOPS

SHOWN ON
MARKETS OF INLAND
STAMP

2" LETTERS

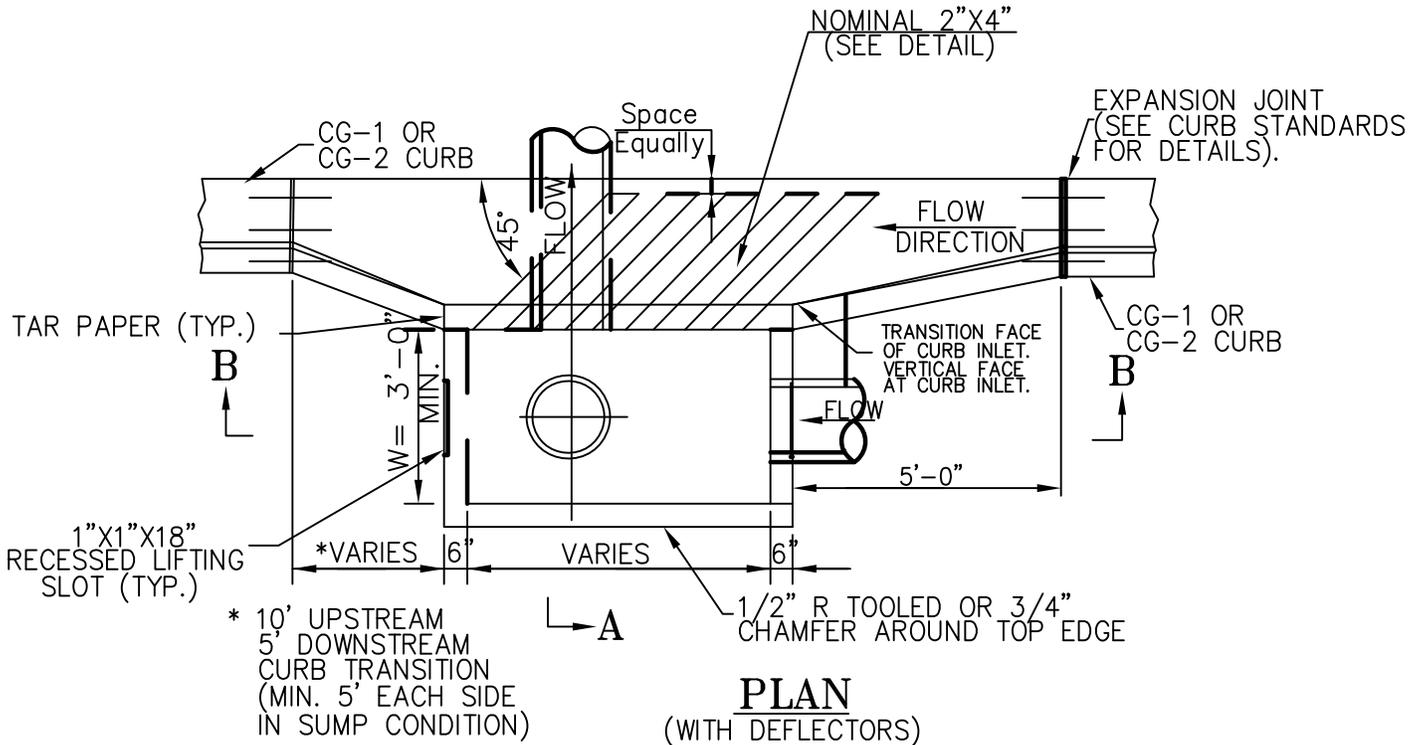


CITY OF LIBERTY, MO
DEPARTMENT OF
PUBLIC WORKS

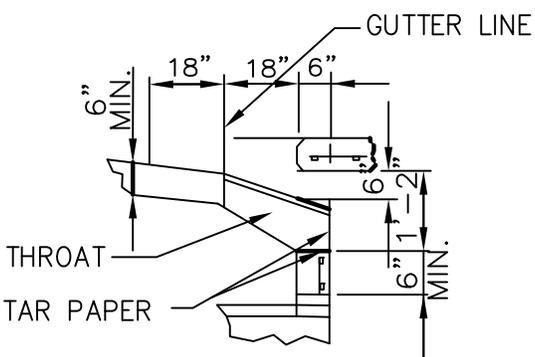
INLET STAMP

D41-1B

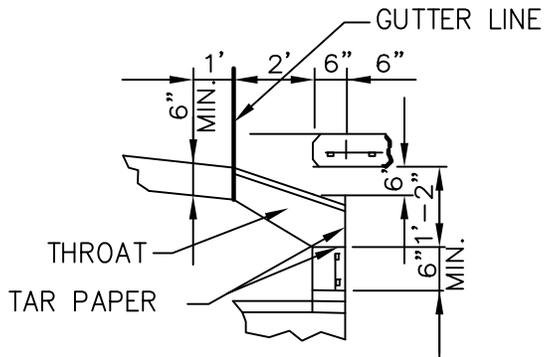
REV 2009



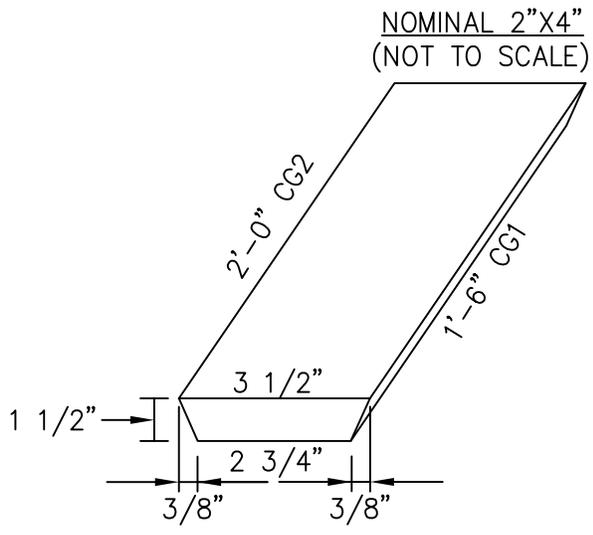
* 10' UPSTREAM
5' DOWNSTREAM
CURB TRANSITION
(MIN. 5' EACH SIDE
IN SUMP CONDITION)



**THROAT DETAIL FOR
C-1 CURB**
(NOT TO SCALE)



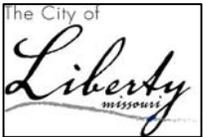
**THROAT DETAIL FOR
C-2 CURB**
(NOT TO SCALE)



**DEFLECTOR CHANNEL
FORM DETAIL**

NOTE: FORMS SHALL BE WELL OILED AND HAND PLACED AT TIME OF POUR. AFTER INITIAL SET, REMOVE FORMS AND FINISH SURFACE OF CONCRETE.

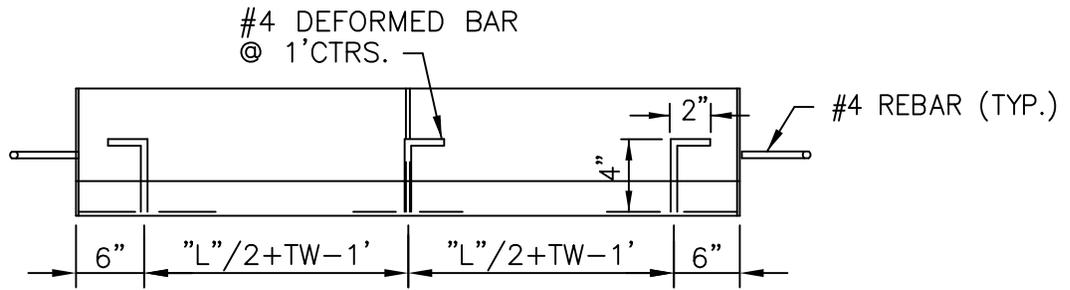
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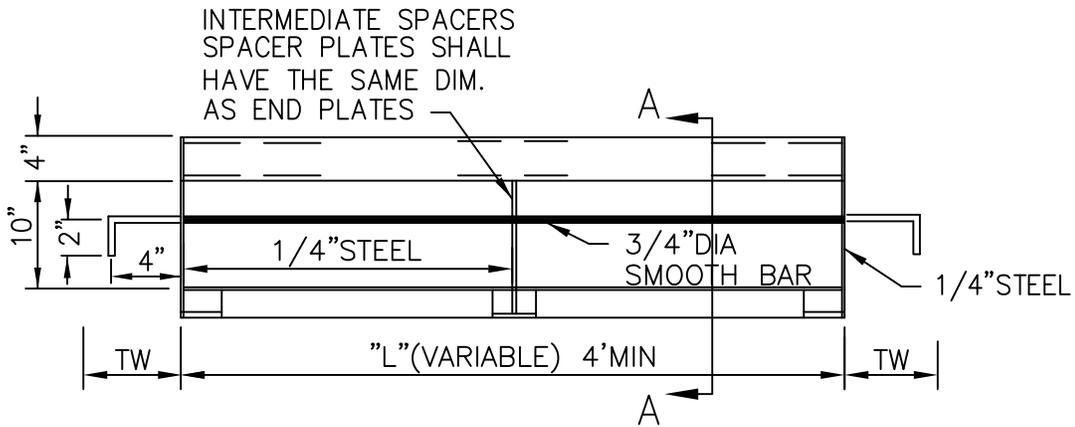
CITY OF LIBERTY, MO
DEPARTMENT OF
PUBLIC WORKS

STANDARD
CURB INLET
WITH DEFLECTORS

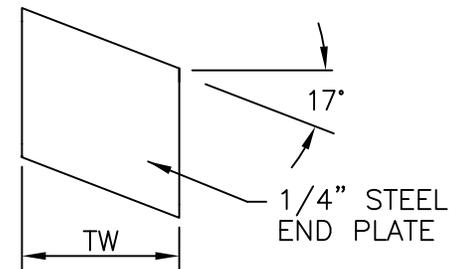
D41-1C



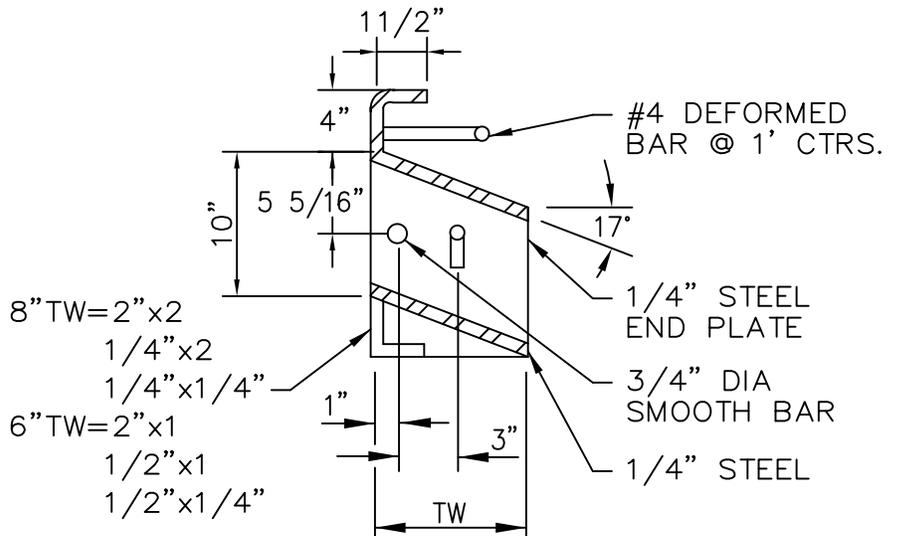
TOP VIEW



FRONT VIEW



END PLATE



SECTION A-A

NOTE: SEE NOTES STANDARD CURB
INLET DETAIL SHEET

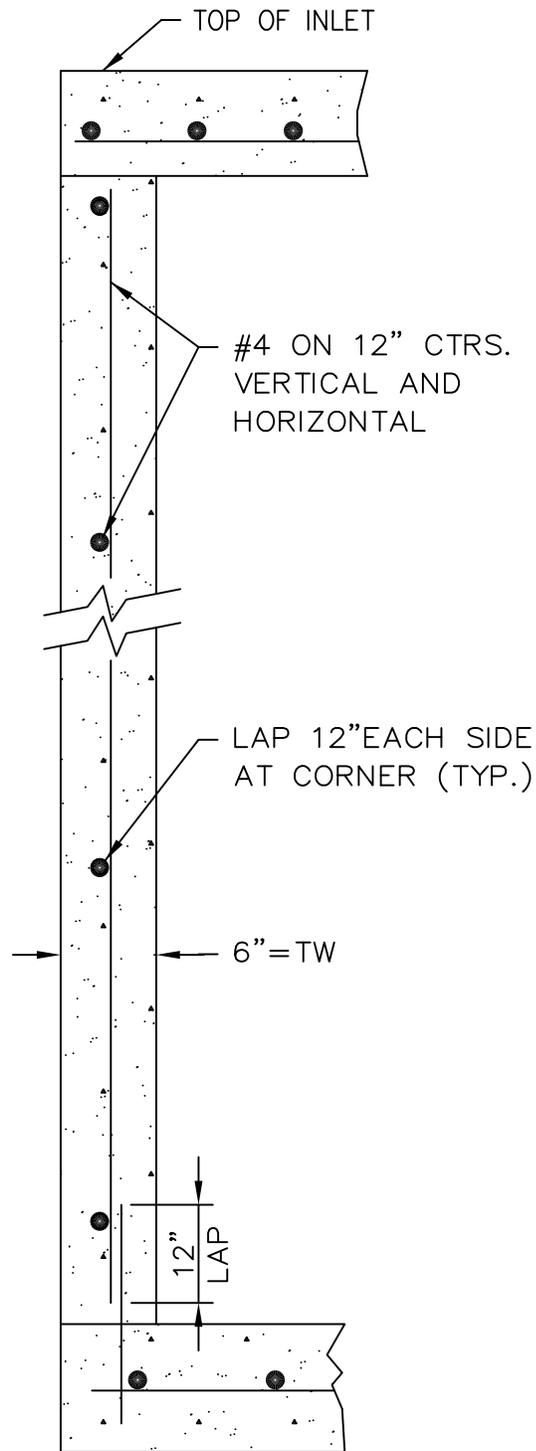
REV 2009



CITY OF LIBERTY, MO
DEPARTMENT OF
PUBLIC WORKS

STEEL FRAME
DETAIL

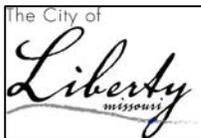
D41-2



CONCRETE

NOTE:
SEE NOTES STANDARD
CURB INLET DETAIL SHEET.

REV 2009

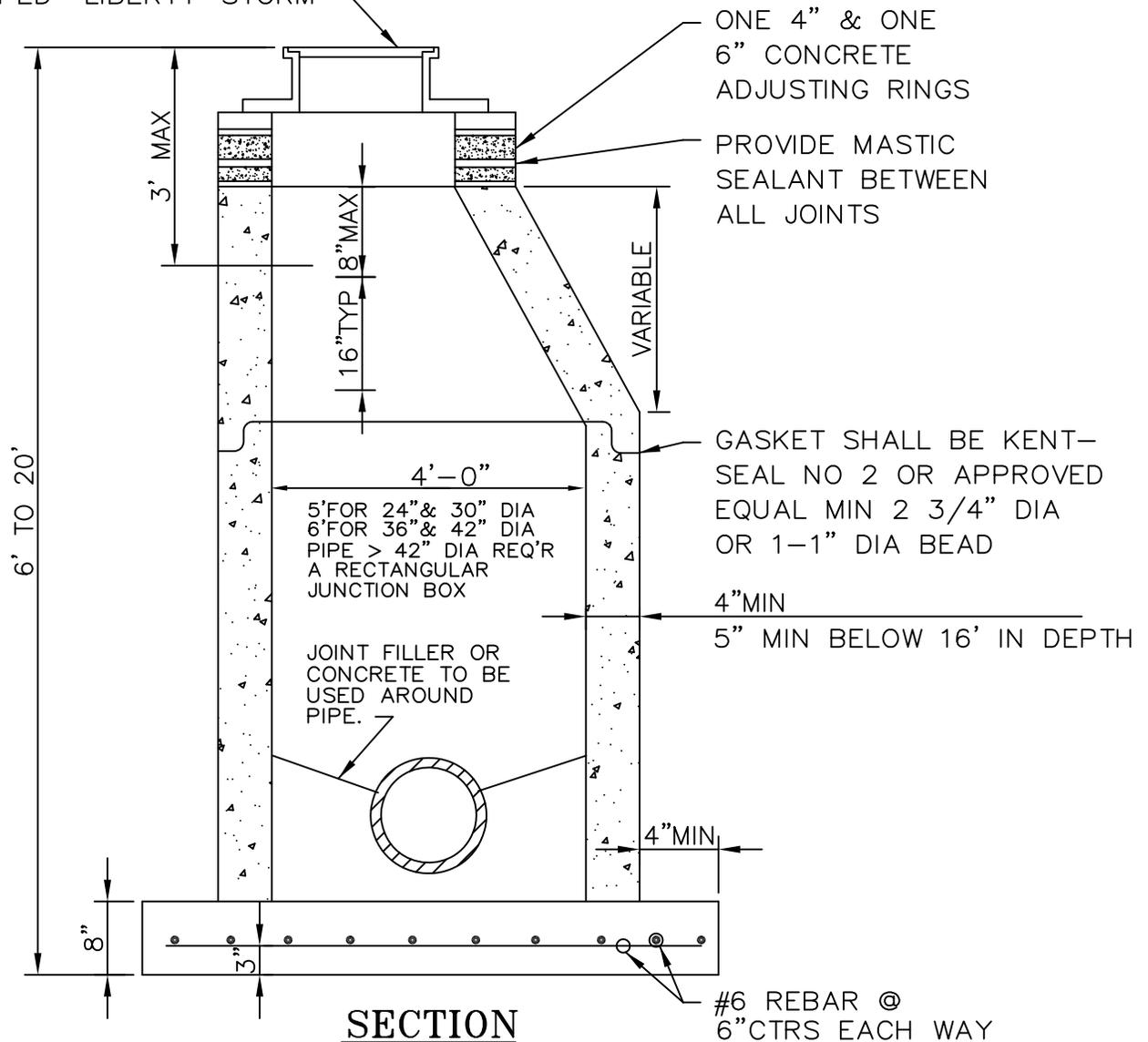


CITY OF LIBERTY, MO
DEPARTMENT OF
PUBLIC WORKS

WALL SECTION

D41-3

CLAY & BAILEY NO 2008, DEETER
 NO 1315 OR APPROVED EQUAL, RING
 & LID STAMPED "LIBERTY-STORM"



NOTE:

1. PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C478 EXCEPT AS MODIFIED BY THE SPECIFICATIONS.
2. BASES NOT BUILT MONOLITHIC WITH BOTTOM SECTION; THE BOTTOM SEE SHALL BE POURED OF CLASS I 3000 PSI CONCRETE.
3. MANHOLE MAY BE TRANSITIONED TO 4' DIA., 8' ABOVE F.L. OF OUTFALL FOR 5' AND 6' MANHOLES.
4. THE BOTTOM SECTION OF ALL PRECAST MANHOLES NOT BUILT MONOLITHIC WITH THE BASE SHALL BE SET INTO A STEEL REINFORCED POURED CONCRETE BASE A MIN OF 4" (#4 @ 6" E.W.)
5. THE COMPRESSIVE STRENGTH OF CONCRETE USED IN THE CONSTRUCTION OR PRECAST REINFORCED CONCRETE MANHOLES SHALL NOT BE LESS THAN 4000 PSI.
6. ONLY ECCENTRIC MANHOLE CONES WILL BE ALLOWED UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.

REV 2009

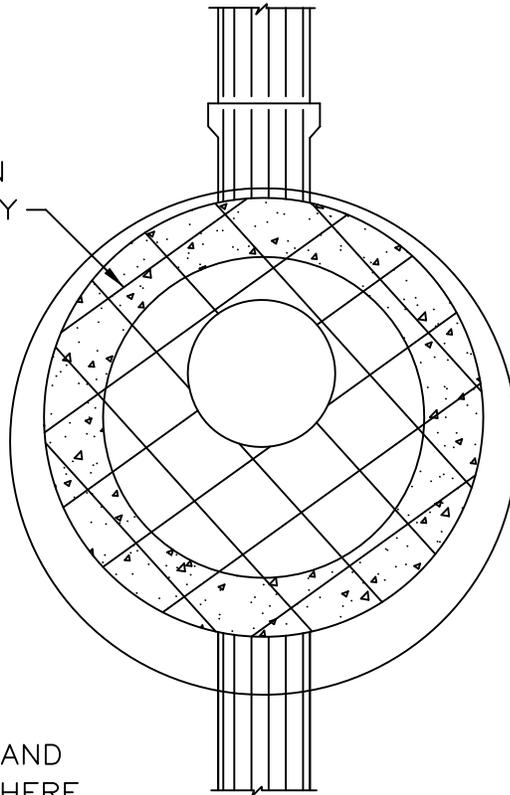


CITY OF LIBERTY, MO
 DEPARTMENT OF
 PUBLIC WORKS

STANDARD STORM
 SEWER MANHOLE

D41-4

#5 BARS AT 6" ON CENTERS EACH WAY

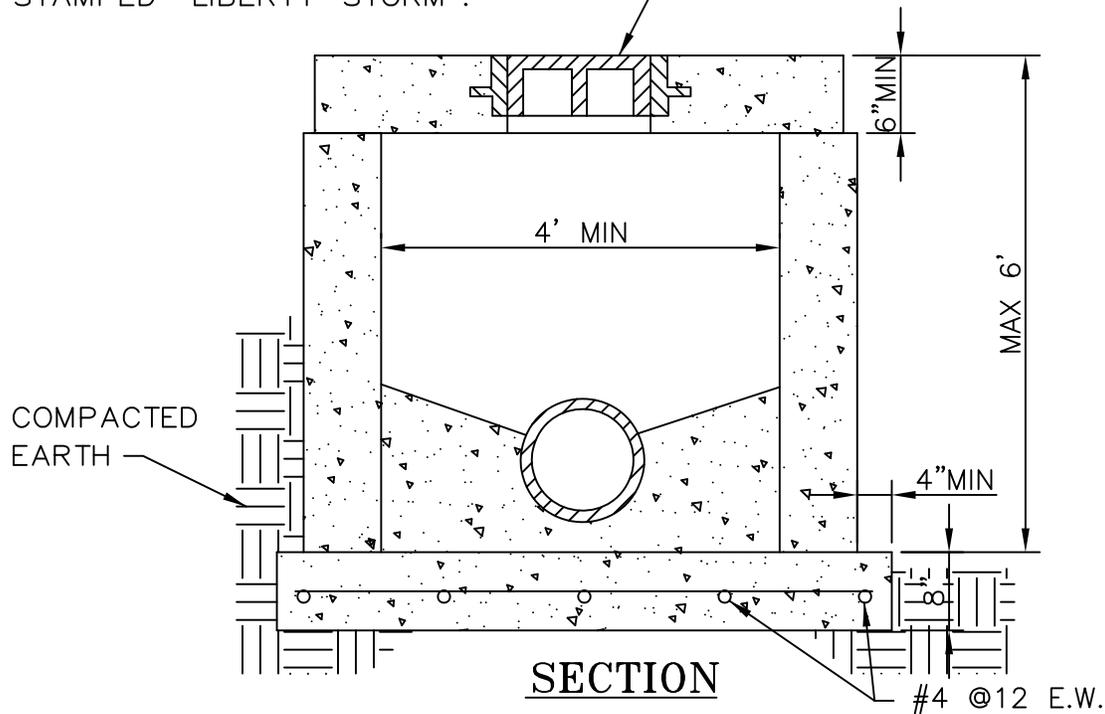


PLAN

NOTE:

1. USE OF A STANDARD LID AND RING WILL BE ALLOWED WHERE GRADE PERMITS (SEE SPEC. FOR APPROVED TYPES).
2. FOR DIMENSIONS NOT SHOWN SEE STANDARD STORM SEWER MANHOLE DETAIL.
3. COVER STAMPED "LIBERTY-STORM".

CLAY & BAILEY NO 2020 DEETER NO 2016 OR APPROVED EQUAL. RING AND LID (CAST IN MANHOLE TOP).



SECTION

REV 2009



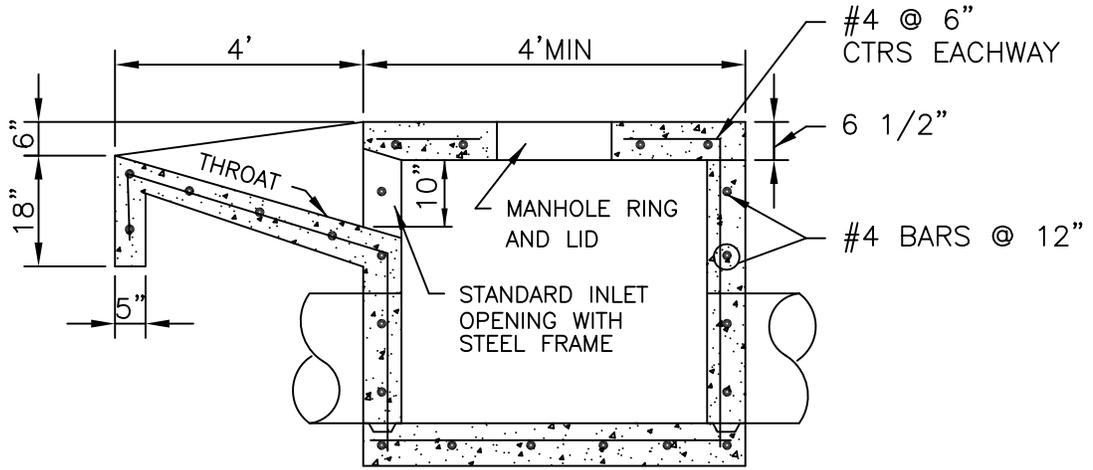
CITY OF LIBERTY, MO
DEPARTMENT OF
PUBLIC WORKS

SHALLOW JUNCTION
BOX DETAIL

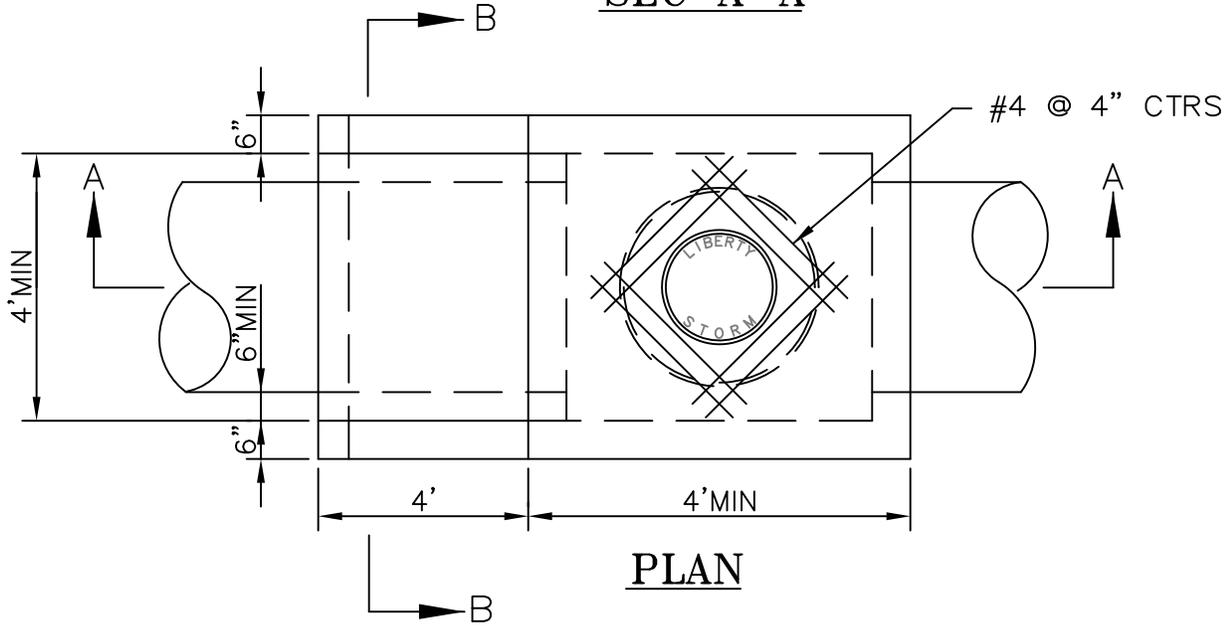
D41-5

NOTES:

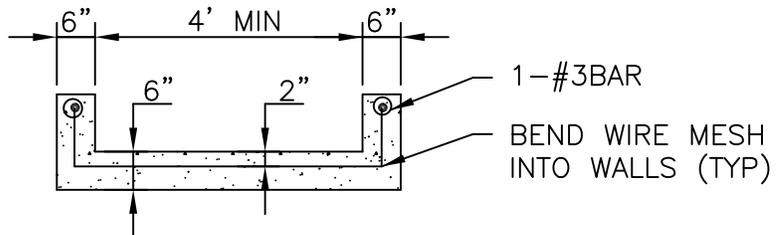
1. THROAT AND THROAT WALL SHALL BE POURED MONOLITHIC UNLESS PRECAST BOX IS USED
2. MANHOLE RING AND LID SHALL BE CLAY & BAILEY NO. 2020 OR DEETER 2016 (185 LBS.)
3. ACCESS COVER STAMPED "LIBERTY-STORM"
4. INLET TOP SHALL INCLUDE STAMP CAST IN CONCRETE LID WHICH READS "NO DUMPING - DRAINS TO STREAM" PER D41-1B.



SEC A-A

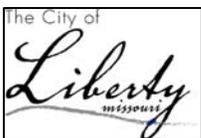


PLAN



SEC B-B

REV 2009

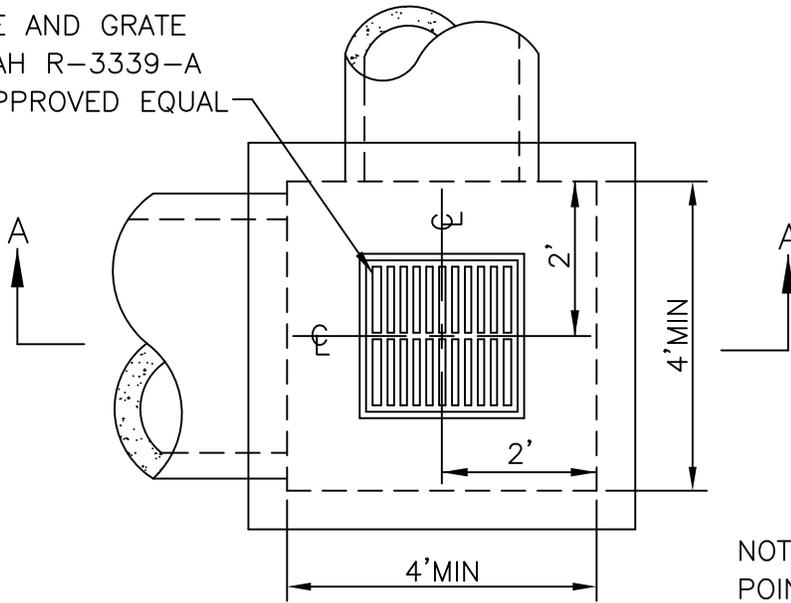


CITY OF LIBERTY, MO
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YARD INLET
DETAIL

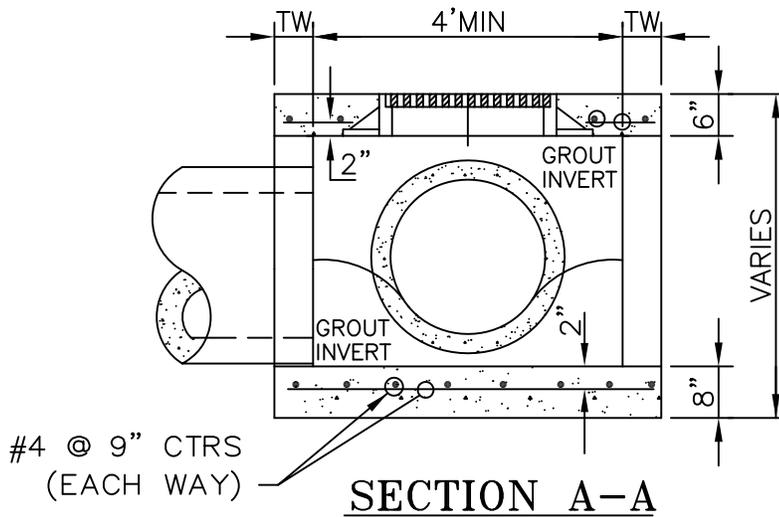
D41-6

CATCH BASIN INLET
 FRAME AND GRATE
 NEENAH R-3339-A
 OR APPROVED EQUAL



PLAN

NOTE:
 POINTS OF ATTACHMENT
 PROVIDED FOR LIFTING
 PRE CAST TOPS SHALL NOT
 BE LOCATED ON THE TOP
 SIDE OF INLET TOP COVER.

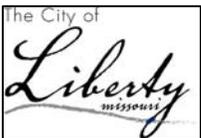


SECTION A-A

FOR WALL SECTION SEE STANDARD DETAIL

NOTE: INLET TOP SHALL INCLUDE STAMP CAST IN CONCRETE LID WHICH
 READS "NO DUMPING - DRAINS TO STREAM" PER D41-1B.

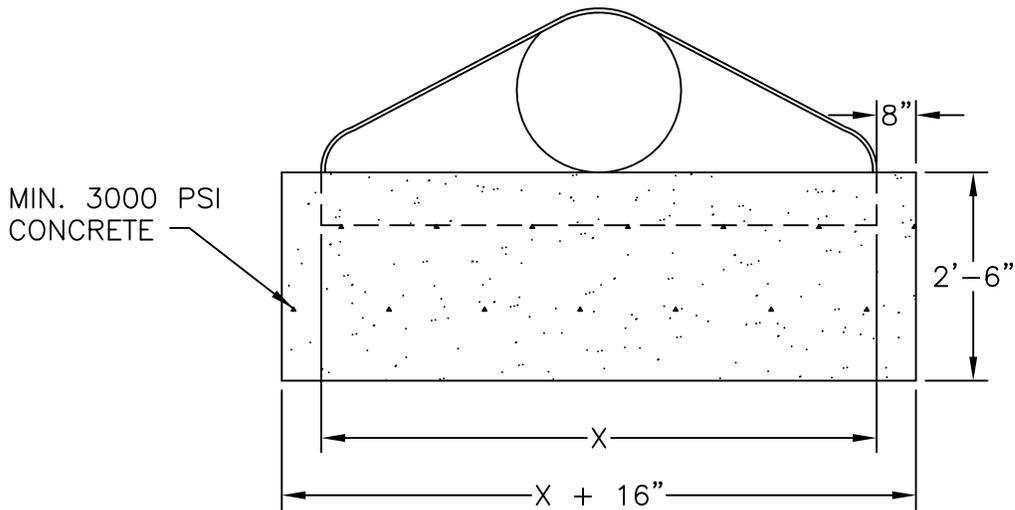
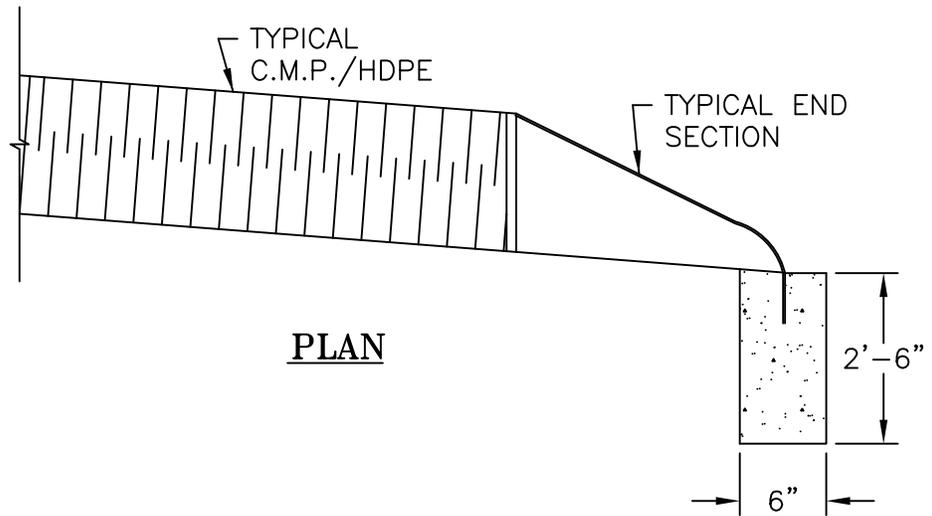
REV 2009



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 DEPARTMENT OF
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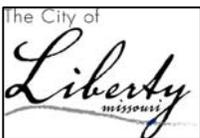
AREA INLET
 DETAIL

D41-7



END VIEW

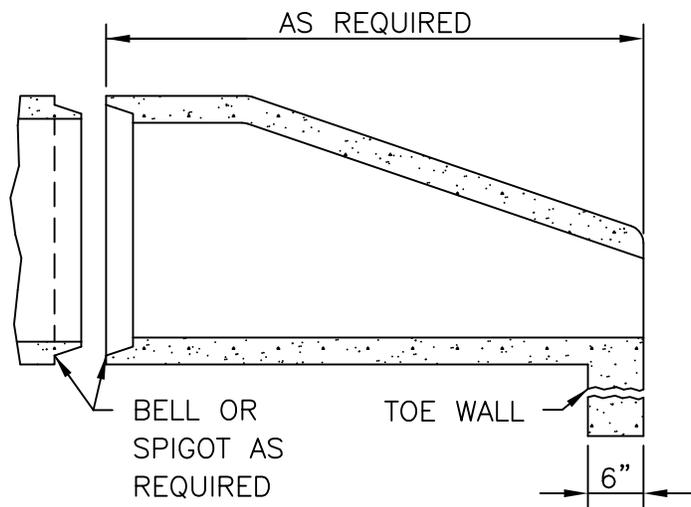
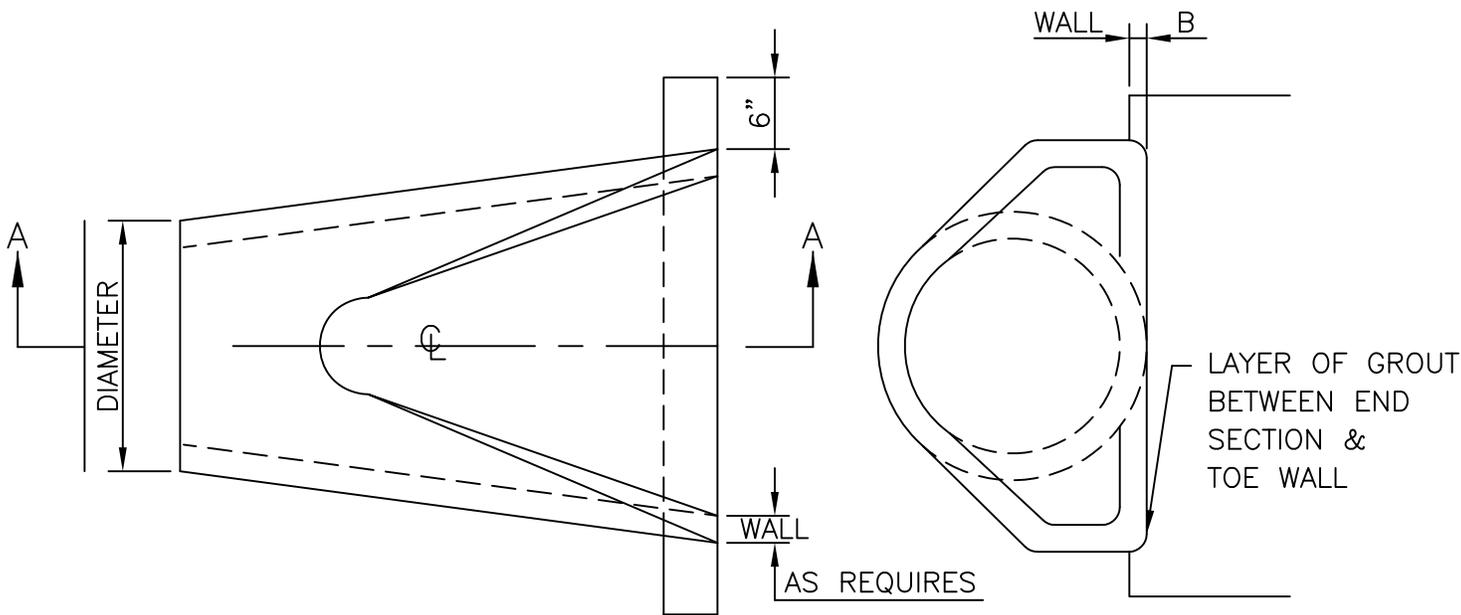
REV 2009



CITY OF LIBERTY, MO
DEPARTMENT OF
PUBLIC WORKS

TYPICAL METAL/HDPE
END SECTION DETAIL

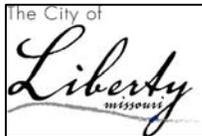
D41-8



SECTION A-A

DIMENSIONS	
DIAMETER	B
12"-12"	18"
24"-48"	24"
54"-66"	36"

REV 2009



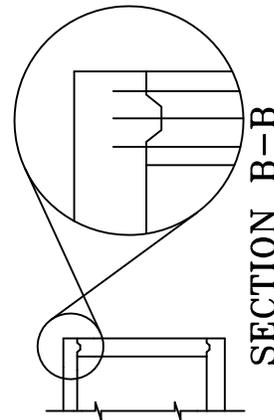
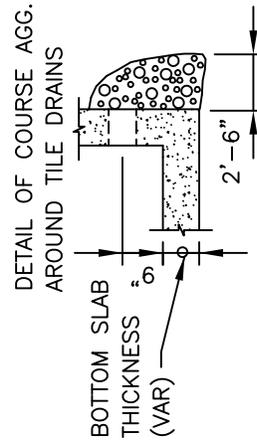
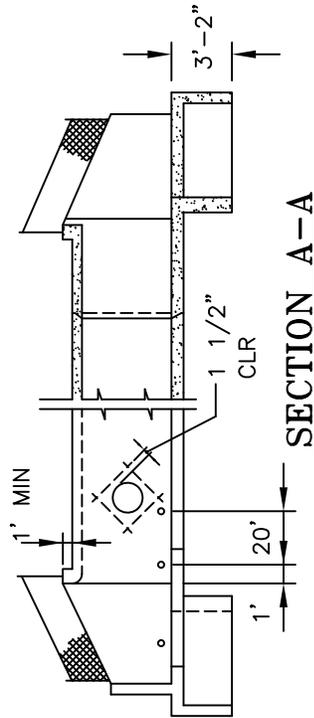
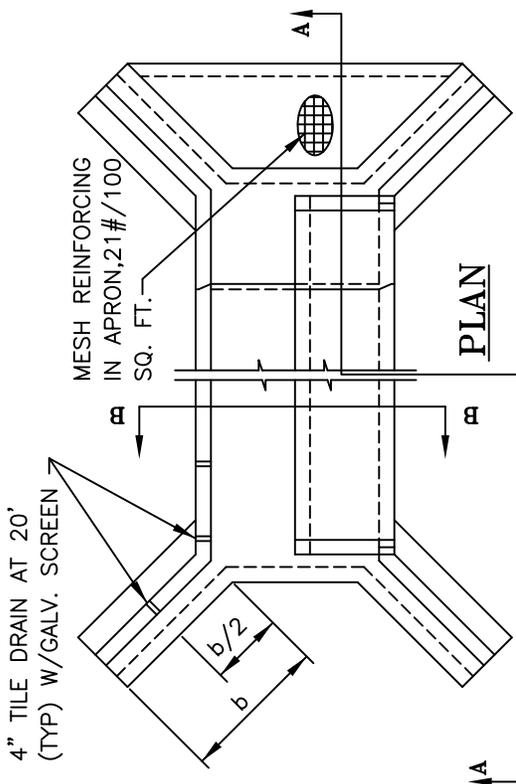
CITY OF LIBERTY, MO
DEPARTMENT OF
PUBLIC WORKS

TYPICAL PRECAST END
SECTION DETAIL

D41-9

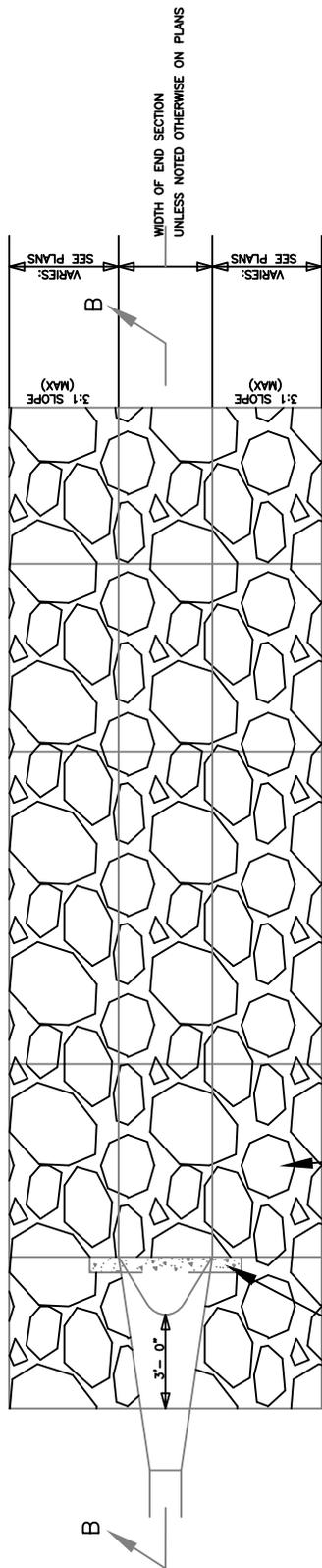
GENERAL NOTE:

- RCB'S SHALL BE DESIGNED TO CARRY AASH TO HS20 44 LOADING AS OUTLINED IN THE STANDARD SPEC. FOR HIGHWAY BRIDGES, ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1977 EDITION.
- ALL CONCRETE SHALL DEVELOP A MIN. 28 DAY COMPRESSIVE STRENGTH OF $F_c = 4000$ PSI.
- REINFORCING STEEL SHALL BE ASTM A 615 GRADE 60, EXCEPT TIES AND STIRRUPS WHICH SHALL BE GRADE 40.
- AT ALL HOLES IN CONCRETE WALLS. ADD 4#5 BARS (OPENING DIMENSION PLUS 60 BARS DIA. LONG) DIAGONALLY TO THE MAIN WALL REINFORCEMENT. SPREAD MAIN REINFORCEMENT AT ALL PENETRATIONS, DO NOT CUT OR ELIMINATE.
- A CONCRETE SEAL COURSE SHALL BE CONSTRUCTED WHERE SPECIFIED ON THE PLANS OR BY THE CITY ENGINEER. ALL RCB BASE SLABS SHALL BE CONSTRUCTED ON STABLE SUBGRADE.
- KEYED JOINTS SHALL BE PROVIDED AS SHOWN IN ALL CULVERTS WHERE THE LENGTH IS 40' OR MORE. THESE JOINTS SHALL BE SPACED SO AS TO DIVIDE THE BOX INTO SECTIONS OF EQUAL LENGTH. THE REINFORCING STEEL SHALL BE CARRIED THROUGH EACH KEYED JOINT AND STEEL LAPS SHALL BE 24 TIMES THE BAR DIA. OR A MIN. OF 12".
- STANDARD CONCRETE COVER OF BARS UNLESS OTHERWISE NOTED SHALL BE:
 WHERE DIRT FORMED.....3"
 CONCRETE EXPOSED TO EARTH OR WEATHER #5 BARS AND SMALLER.....1 1/2"
 #6 THROUGH #18 BARS.....2"
- BACKFILLING MAY NOT BEGIN UNTIL THE CONCRETE REACHES A STRENGTH EQUAL TO 75% OF THE DESIGN STRENGTH OR A MIN. OF 14 DAYS AFTER POURING THE TOP UNLESS THE DESIGN STRENGTH OF THE CONCRETE (4000 PSI) IS ATTAINED PRIOR TO THE 14 DAY PERIOD.
- A STANDARD 42" HIGH CHAIN LINK FENCE SHALL BE REQUIRED AT EACH END OF ALL RCB'S UNLESS APPROVED OTHERWISE BY THE CITY ENGINEER. FENCING SHALL EXTEND CONTINUOUSLY ALONG THE HUB GUARD AND DOWN EACH WINGWALL.
- HUB GUARDS SHALL BE DESIGNED TO ACCOMMODATE GRADING WITH A 6:1 MAX. SLOPE BETWEEN BACK OF CURB AND THE HUB GUARD (OR EDGE OF SIDEWALK AND THE HUB GUARD IF APPLICABLE).
- CONTRACTOR TO SUPPLY AN EXTRA AMOUNT OF REINFORCEMENT. 1% OF THE TOTAL WEIGHT OF THE DESIGNED REINFORCEMENT IN VARIOUS LENGTHS AND SIZE TO BE USED AT THE DISCRETION OF THE CITY ENGINEER.
- FLOATING APRON SHALL BE REQUIRED AT DOWNSTREAM END OF RCB, UNLESS BOTTOM OF CHANELL RESTS ON SOUND BEDROCK.
- TOE WALL TO BE CONSTRUCTED AT EACH END OF RCB. TOE WALL TO 3'2" MIN. BELOW FLOWLINE OF RCB OR 6" INTO BEDROCK IF APPLICABLE.



NOTE:
 IF TOP AND WALLS ARE MONO-LITHICALLY POURED THEN UPPER KEYWAY CAN BE DELETED, REBAR MUST CONTINUE THROUGH KEYWAY AS SHOWN.

REV 2009



STONE RIPRAP OUTLET PROTECTION
NO SCALE

NON-GROUTED RIPRAP W/ FILTER BLANKET
SEE PROFILE FOR THICKNESS
SEE LIBERTY SPECIFICATIONS FOR
GRANULAR BLANKET MATERIALS

CONCRETE
TOEWALL

3'-0"

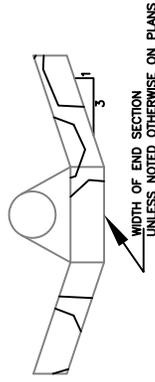
3:1 SLOPE (MAX)

VARIES-
SEE PLANS

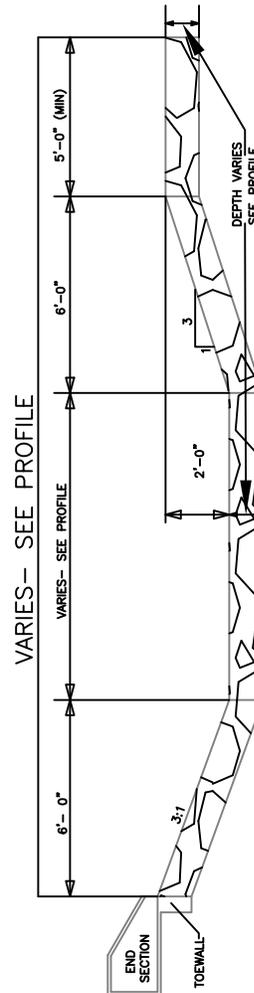
WIDTH OF END SECTION
UNLESS NOTED OTHERWISE ON PLANS

VARIES-
SEE PLANS

STONE RIPRAP OUTLET PROTECTION
(END VIEW)
NO SCALE



WIDTH OF END SECTION
UNLESS NOTED OTHERWISE ON PLANS



VARIES- SEE PROFILE

5'-0" (MIN)

6'-0"

VARIES- SEE PROFILE

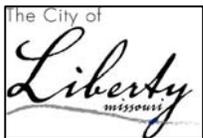
6'-0"

2'-0"

DEPTH VARIES
SEE PROFILE

SECTION B-B: STONE RIPRAP OUTLET PROTECTION (SIDE VIEW)
NO SCALE

REV 2009



CITY OF LIBERTY, MO
DEPARTMENT OF
PUBLIC WORKS

DETAIL OF RIPRAP
OUTLET STILLING BASIN

41-11