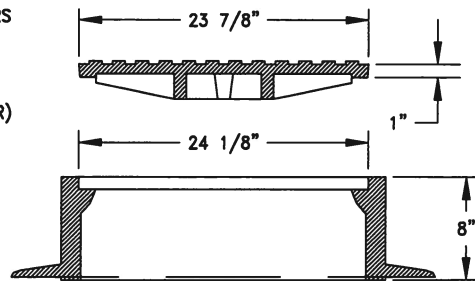


HALF PLAN

STANDARD MANUFACTURERS  
LETTERING SIZES  
AND PATTERNS  
(LETTERING SHALL BE  
CAST AS PART OF COVER)



SECTION A-A

NOTE:

1. CASTING SPECIFICATIONS: ASTM A-48 WITH A MINIMUM TENSILE STRENGTH OF 30,000 PSI (CLASS 30). (NEENAH TYPE R-1706 RING & COVER OR EQUIVALENT).
2. TOTAL MINIMUM WEIGHT APPROXIMATELY 410 LBS..
3. DO NOT USE IN APPLICATIONS WHERE MANHOLES ARE SUBJECTED TO DRAINAGE WAYS.

Sheet Revisions

Date	Comments



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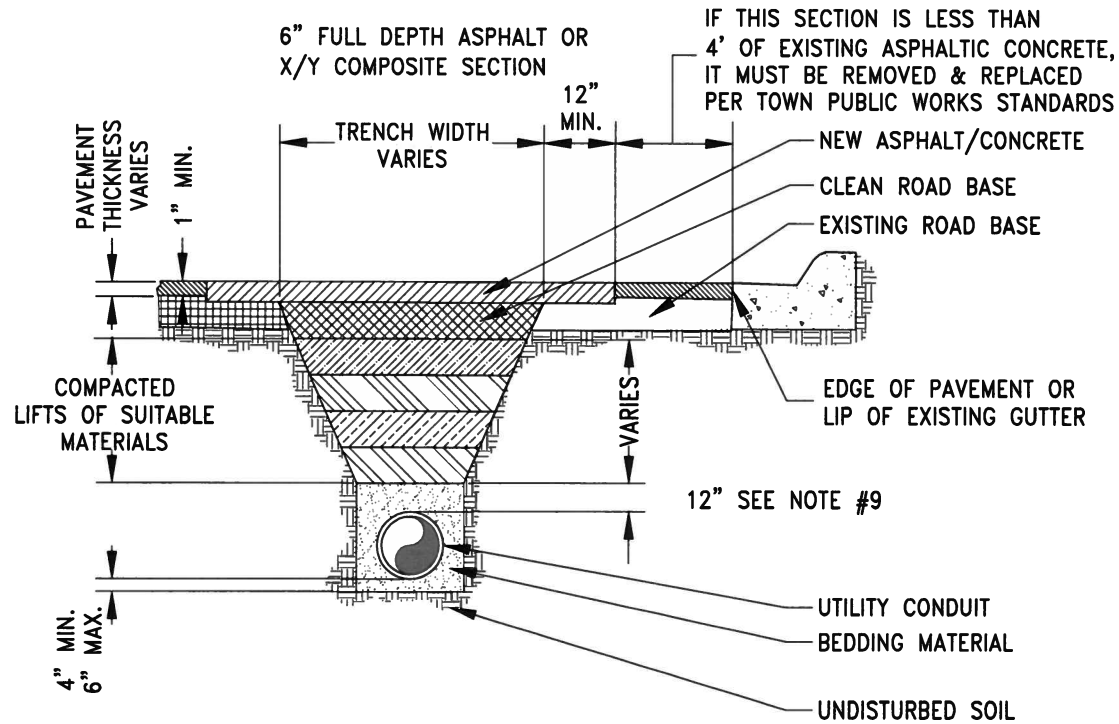
STORM MANHOLE  
24" RING & COVER

Issued By: Town of Castle Rock, Development Services March 31, 2010

DETAIL PLAN NO.

SD-1

Sheet 1 of 1



**NOTES:**

1. ALL TRENCHES SHALL BE BACKFILLED IN ACCORDANCE WITH THE ABOVE DETAIL UNLESS OTHERWISE SPECIFIED BY THE TOWN.
2. PRIOR TO PLACEMENT OF ASPHALT/CONCRETE, PAVEMENT EDGE SHALL BE SAW CUT TO A CLEAN, VERTICAL & STRAIGHT EDGE.
3. 1-SAC SAND/CEMENT SLURRY MAY BE SUBSTITUTED FOR BACKFILL MATERIAL.
4. TRENCH WIDTH SHALL NOT BE MORE THAN 16" NOR LESS THAN 12" WIDER THAN THE DIAMETER OF THE PIPE.
5. USE #4 REBAR AT 2' CENTERS ALONG THE PERIMETER OF CONCRETE REPLACEMENT SECTIONS.
6. 95% COMPACTION IS REQUIRED ON ALL TRENCHING ZONES, BOTH IMPROVED & UNIMPROVED AREAS.
7. IN UNIMPROVED AREAS, ALL DISTURBED AREAS SHALL BE REGRADED, SEEDED & MULCHED.
8. IN CONCRETE ROADWAYS, A MINIMUM OF 1/2 PANEL WIDTH OR 10' x 5' SECTION WILL BE ALLOWED TO REMAIN, OTHERWISE THE ENTIRE CONCRETE PANEL MUST BE REPLACED.
9. BEDDING MATERIAL DEPTH WHEN INSTALLING STORM SEWER SHALL BE UP TO SPRING LINE, EXCEPT IN AREAS OF UNSUITABLE BACKFILL, THEN BEDDING MATERIAL SHALL BE 12" ABOVE PIPE.

Sheet Revisions	
Date	Comments

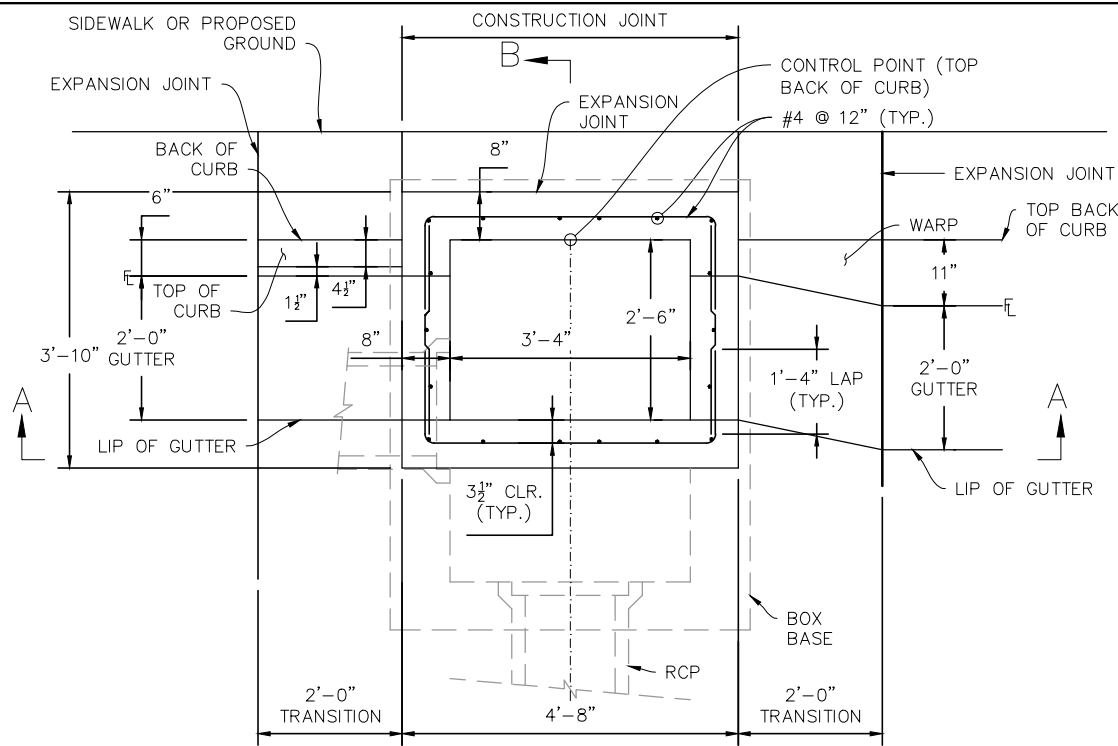


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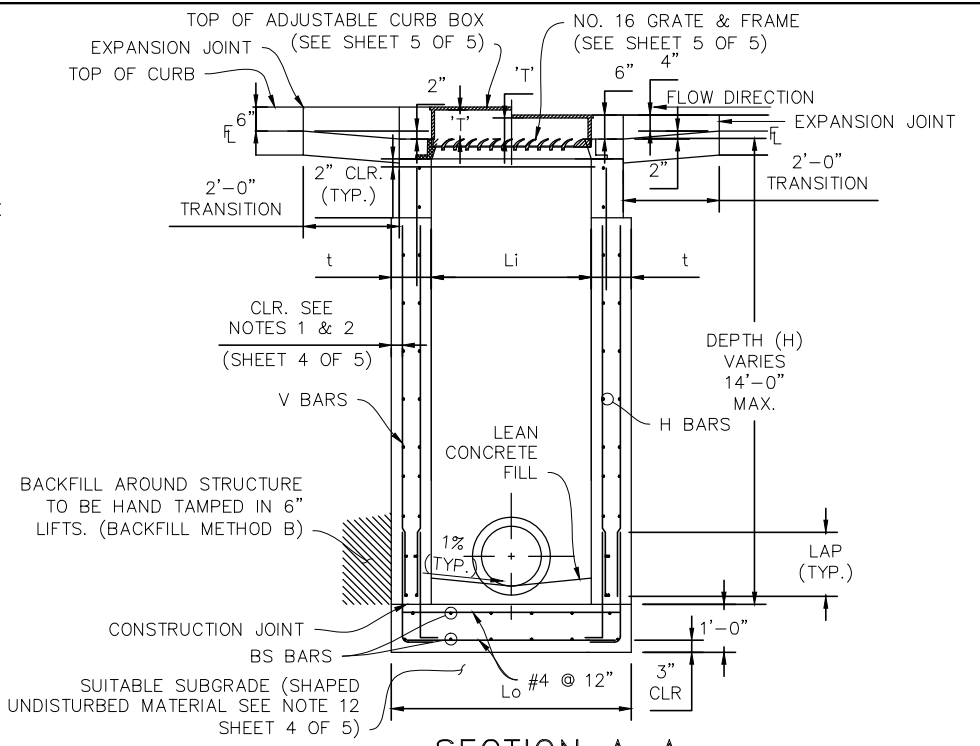
# STORM TRENCH DETAIL

Issued By: Town of Castle Rock, Development Services March 31, 2010

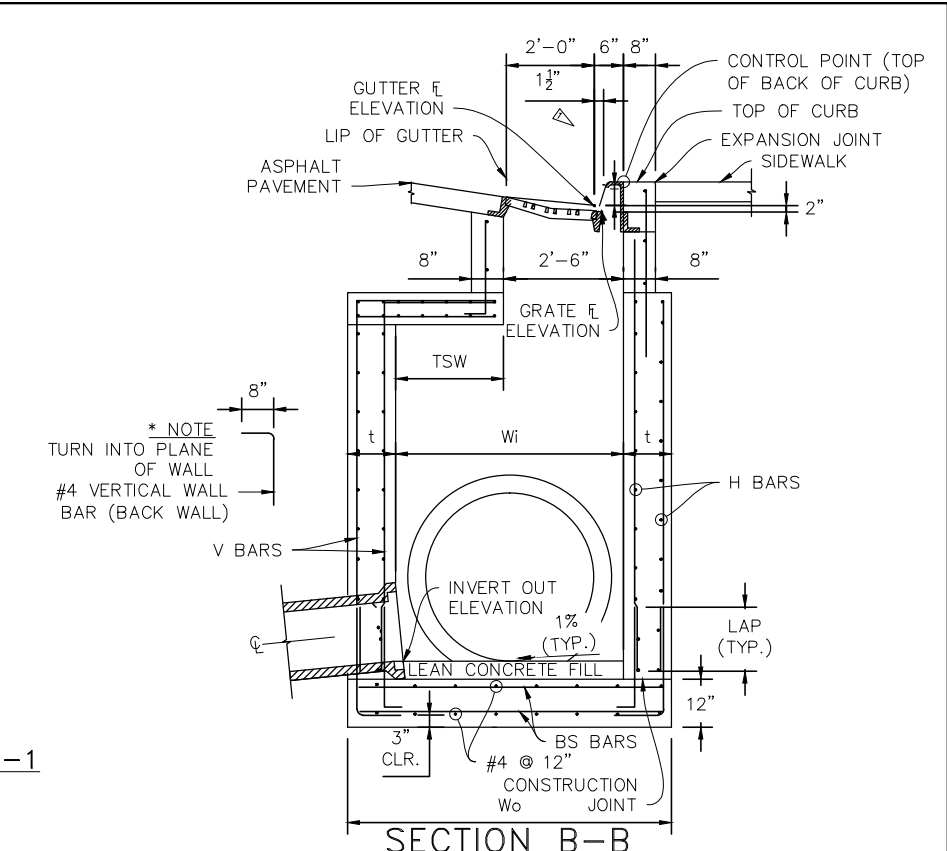
DETAIL PLAN NO.
SD-2
Sheet 1 of 1



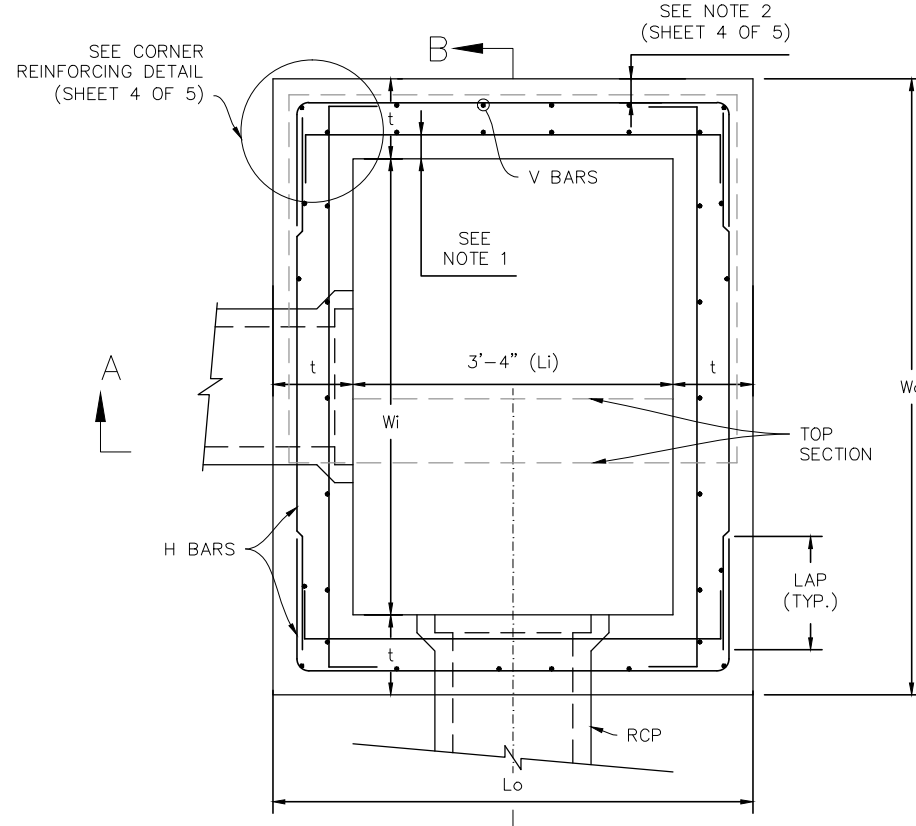
VC PER DETAIL CG-1 MS PER DETAIL CG-1  
TOP SECTION PLAN



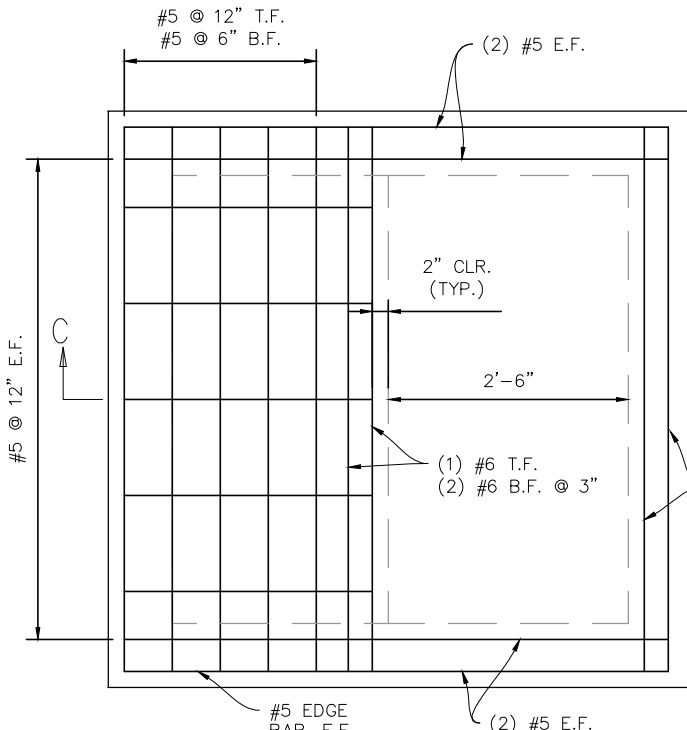
VC PER DETAIL CG-1 SECTION A-A MS PER DETAIL CG-1  
\*T = THROAT OPENING  
\*T = 6" FOR 6" VERTICAL CURB & GUTTER  
\*T = 5" FOR COMBINATION CURB & GUTTER SIDEWALK  
DROP FROM GUTTER ELEVATION TO GRATE ELEVATION (TRANSITION) IS 2".



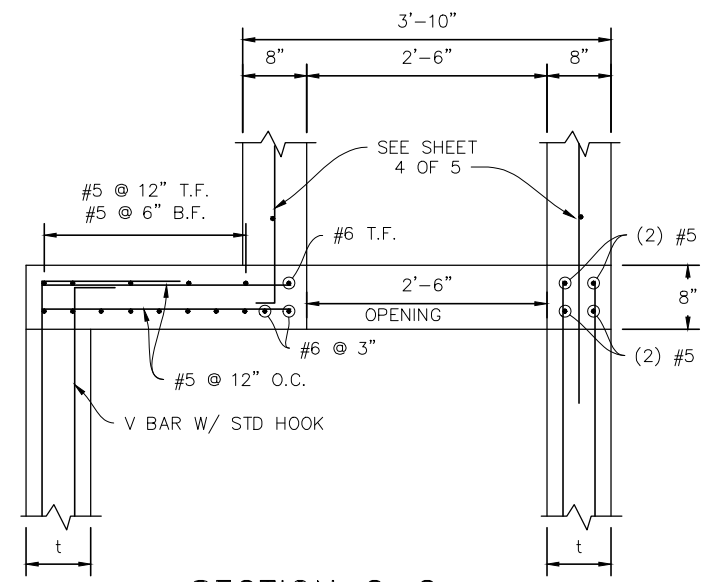
SECTION B-B  
SEE SHEET 5 OF 5 FOR FRAME, GRATE & ADJUSTABLE CURB BOX DETAIL



BOX BASE PLAN



PLAN



SECTION C-C

SINGLE INLET TOP SLAB

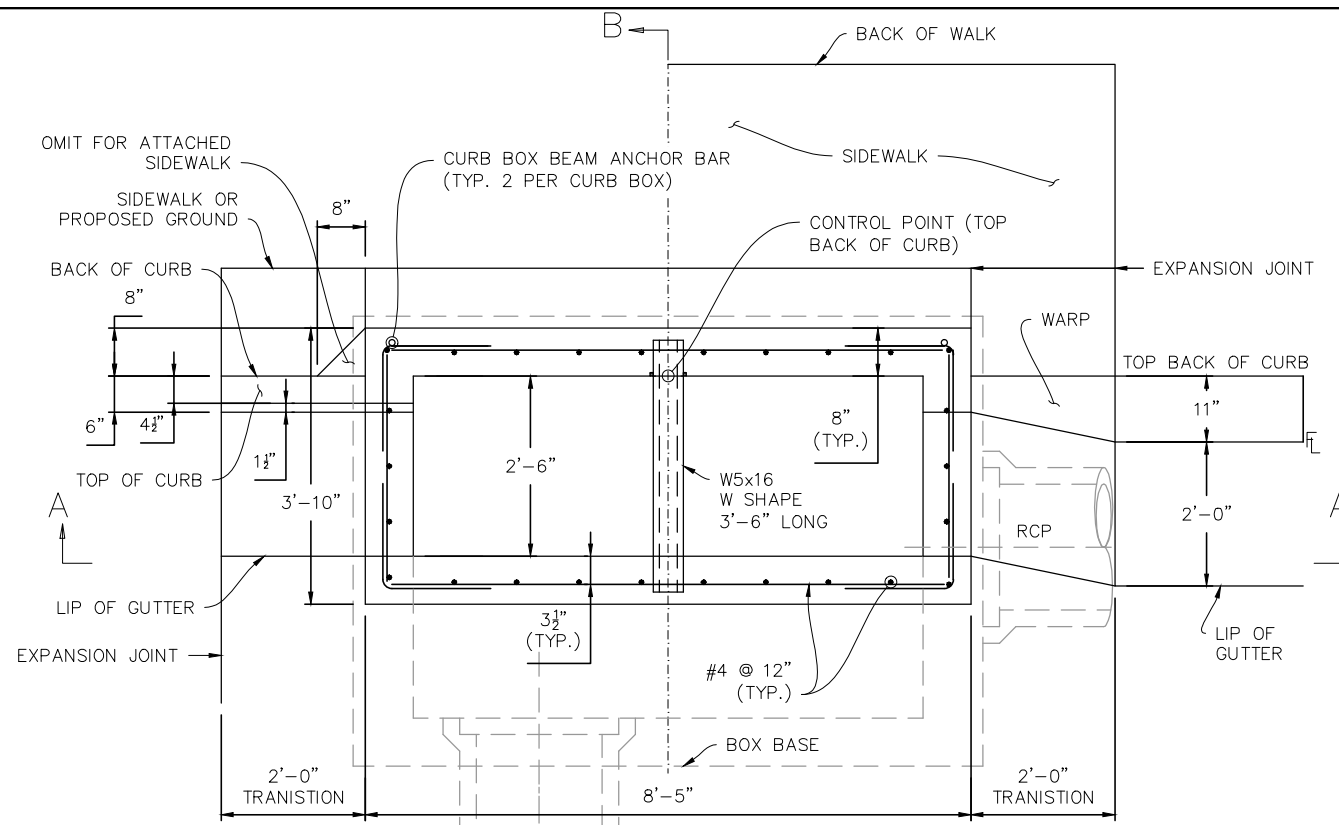
RCP Diameter	Inside Length (Li)	Inside Width (Wi)	Wall Thickness (t)	Outside Length (Lo)	Outside Width (Wo)	Top Slab Width (TSW)	# of Reinforcing Faces	H Bars	V Bars	BS Bars	Lap Splice Length (Lap)
0" - 18"	3'-4"	2'-6"	8"	4'-8"	3'-10"	0'-0"	1	#4 @ 9"	#5 @ 11"	#4 @ 12"	2'-0"
21" - 27"	3'-4"	3'-4"	8"	4'-8"	4'-8"	0'-10"	1	#4 @ 9"	#5 @ 11"	#4 @ 12"	2'-0"
30" - 36"	3'-4"	4'-2"	8"	4'-8"	5'-6"	1'-8"	1	#4 @ 9"	#5 @ 11"	#4 @ 12"	2'-0"
42"	3'-4"	4'-9"	8"	4'-8"	6'-1"	2'-3"	1	#4 @ 9"	#5 @ 11"	#4 @ 12"	2'-0"
48" - 60"	3'-4"	6'-8"	10"	5'-0"	8'-4"	4'-2"	1	#5 @ 12"	#5 @ 11"	#5 @ 12"	2'-3"
66" - 78"	3'-4"	8'-6"	10"	5'-0"	10'-2"	6'-0"	2	#5 @ 10"	#5 @ 11"	#5 @ 10"	2'-3"
84"	3'-4"	9'-0"	10"	5'-4"	10'-8"	6'-6"	2	#5 @ 9"	#5 @ 11"	#5 @ 9"	2'-3"

Sheet Revisions	
Date	Comments

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**TYPE 16  
SINGLE INLET**  
Issued By: Town of Castle Rock, Development Services May 17, 2017

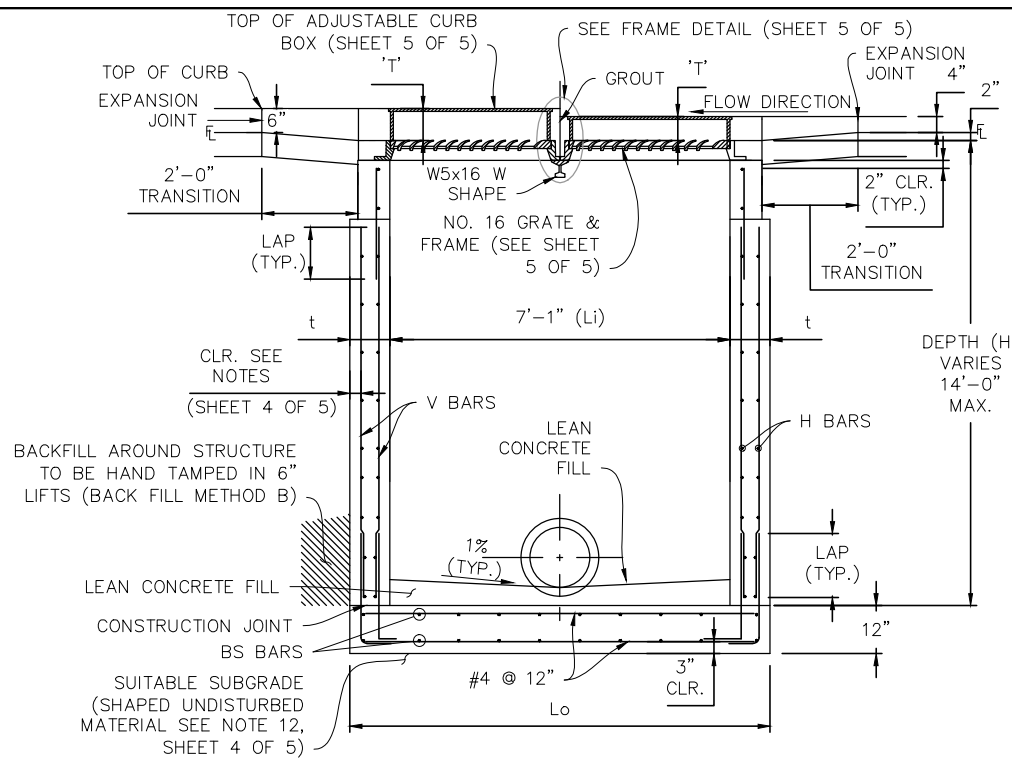
DETAIL PLAN NO.  
**SD-3**  
Sheet 1 of 5



VC PER DETAIL CG-1

MS PER DETAIL CG-1

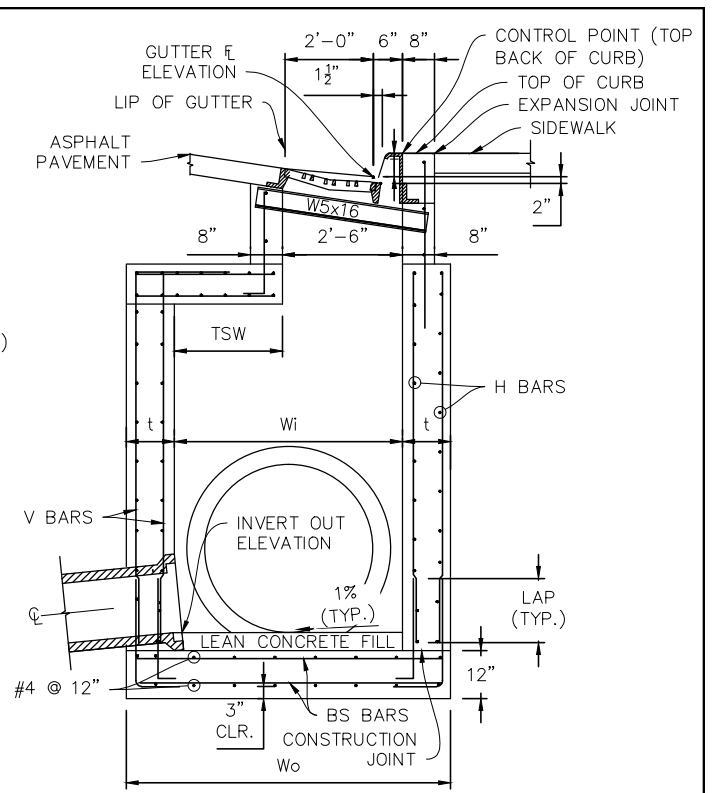
TOP SECTION PLAN



VC PER DETAIL CG-1

SECTION A-A

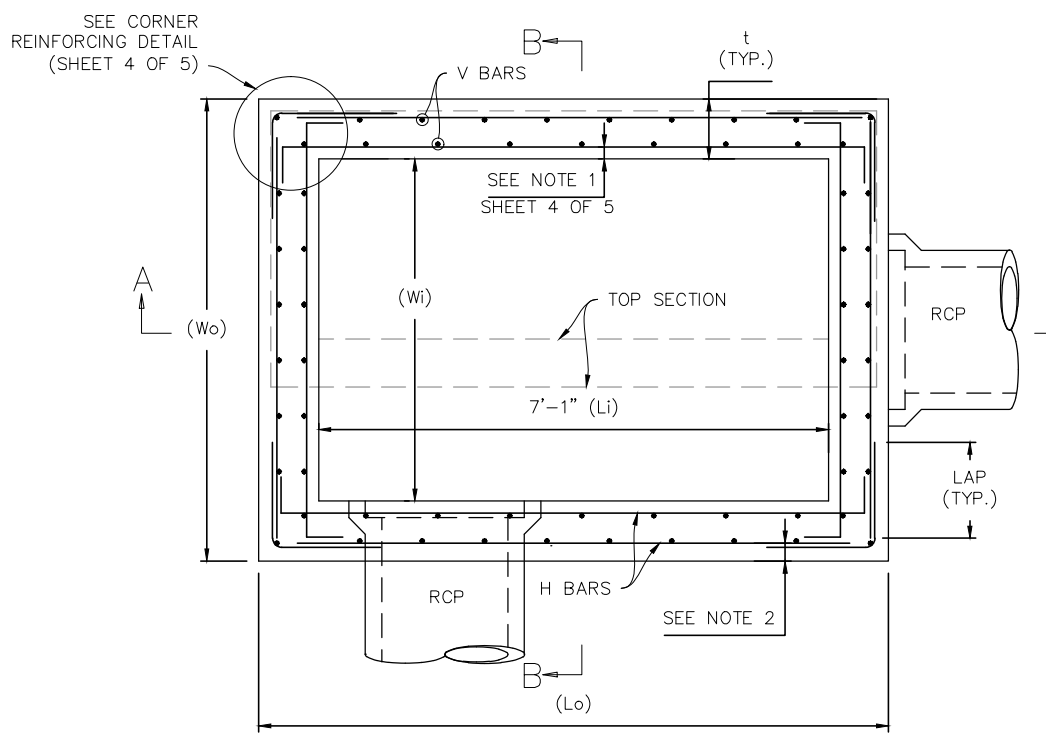
MS PER DETAIL CG-1



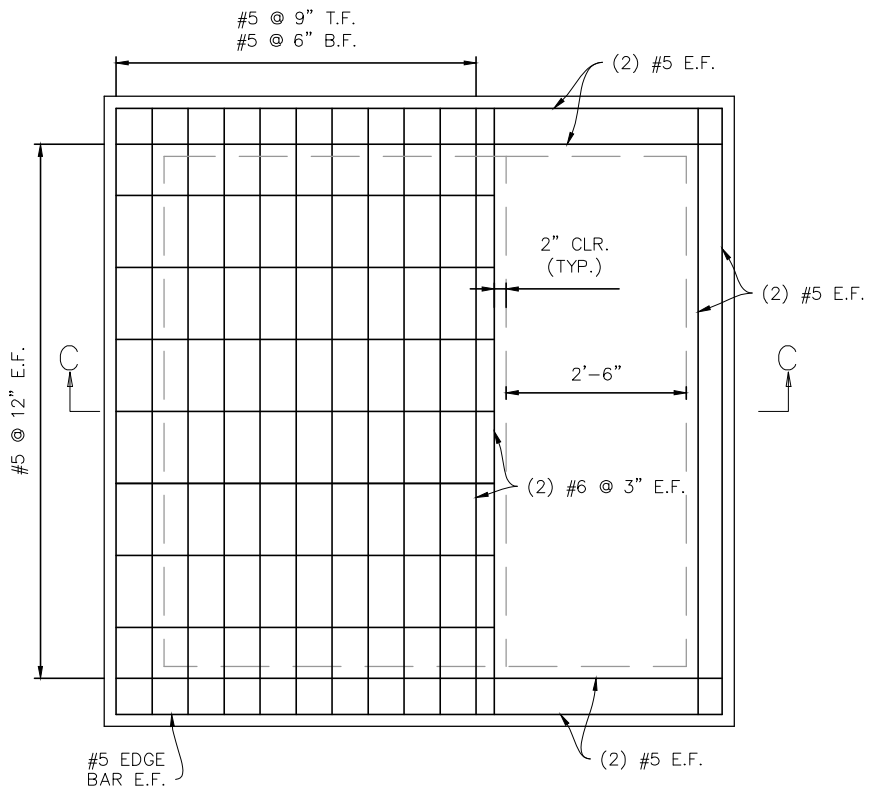
SECTION B-B

SEE SHEET 5 OF 5 FOR FRAME, GRATE & ADJUSTABLE CURB BOX DETAIL

T = THROAT OPENING  
 T = 6" FOR 6" VERTICAL CURB & GUTTER  
 T = 5" FOR COMBINATION CURB & GUTTER SIDEWALK  
 DROP FROM GUTTER FL ELEVATION TO GRATE FL ELEVATION (TRANSITION) IS 2".

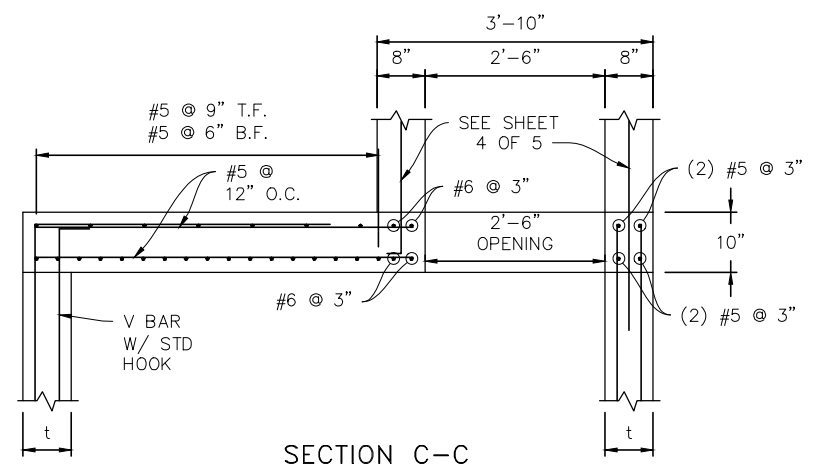


BOX BASE PLAN



PLAN

DOUBLE INLET TOP SLAB



SECTION C-C

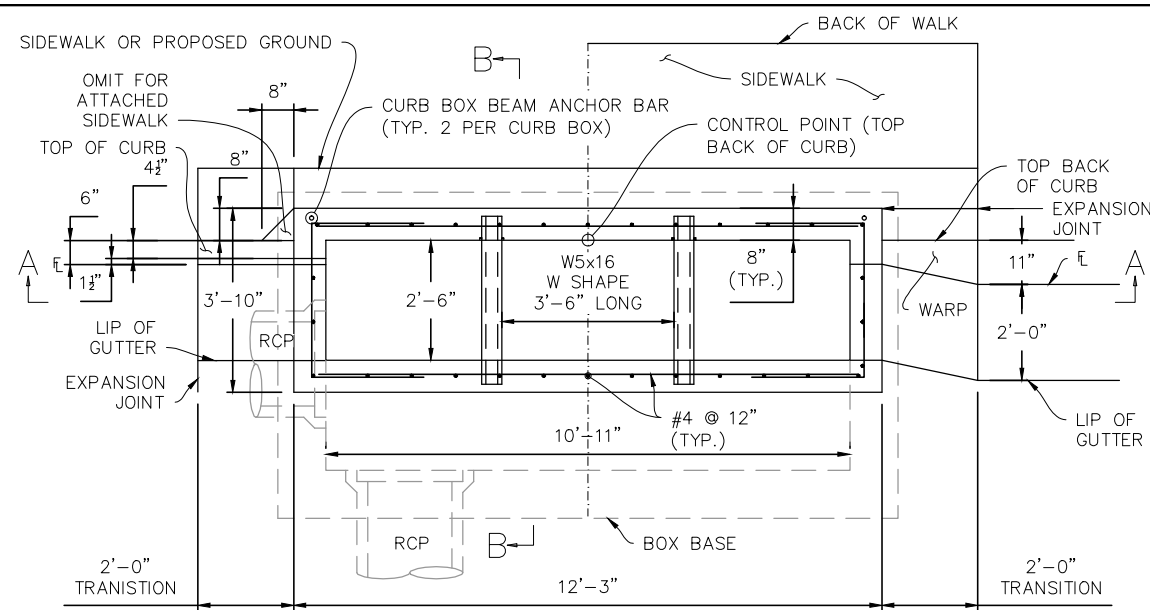
RCP Diameter	Inside Length (Li)	Inside Width (Wi)	Wall Thickness (t)	Outside Length (Lo)	Outside Width (Wo)	Top Slab Width (TSW)	# of Reinforcing Faces	H Bars	V Bars	BS Bars	Lap Splice Length (Lap)
0" - 18"	7'-1"	2'-6"	10"	8'-9"	4'-2"	0'-0"	1	#5 @ 12"	#5 @ 11"	#4 @ 12"	2'-3"
21" - 27"	7'-1"	3'-4"	10"	8'-9"	5'-0"	0'-10"	1	#5 @ 12"	#5 @ 11"	#4 @ 12"	2'-3"
30" - 36"	7'-1"	4'-2"	10"	8'-9"	5'-10"	1'-8"	1	#5 @ 12"	#5 @ 11"	#4 @ 12"	2'-3"
42"	7'-1"	4'-9"	10"	8'-9"	6'-5"	2'-3"	1	#5 @ 12"	#5 @ 11"	#4 @ 12"	2'-3"
48" - 60"	7'-1"	6'-8"	10"	8'-9"	8'-4"	4'-2"	1	#5 @ 12"	#5 @ 11"	#5 @ 12"	2'-3"
66" - 78"	7'-1"	8'-6"	10"	8'-9"	10'-2"	6'-0"	2	#5 @ 10"	#5 @ 11"	#5 @ 10"	2'-3"
84"	7'-1"	9'-0"	10"	9'-1"	10'-8"	6'-6"	2	#5 @ 9"	#5 @ 11"	#5 @ 9"	2'-3"

Sheet Revisions	
Date	Comments

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**TYPE 16**  
**DOUBLE INLET**  
 Issued By: Town of Castle Rock, Development Services May 17, 2017

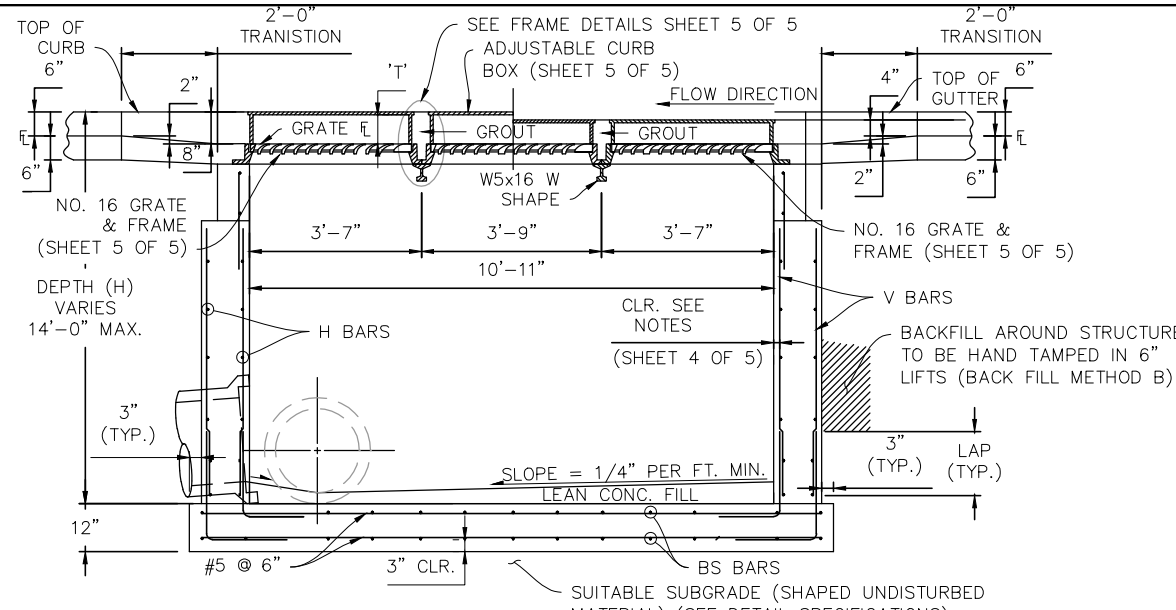
**DETAIL PLAN NO.**  
 SD-3  
 Sheet 2 of 5



VC PER DETAIL CG-1

MS PER DETAIL CG-1

TOP SECTION PLAN



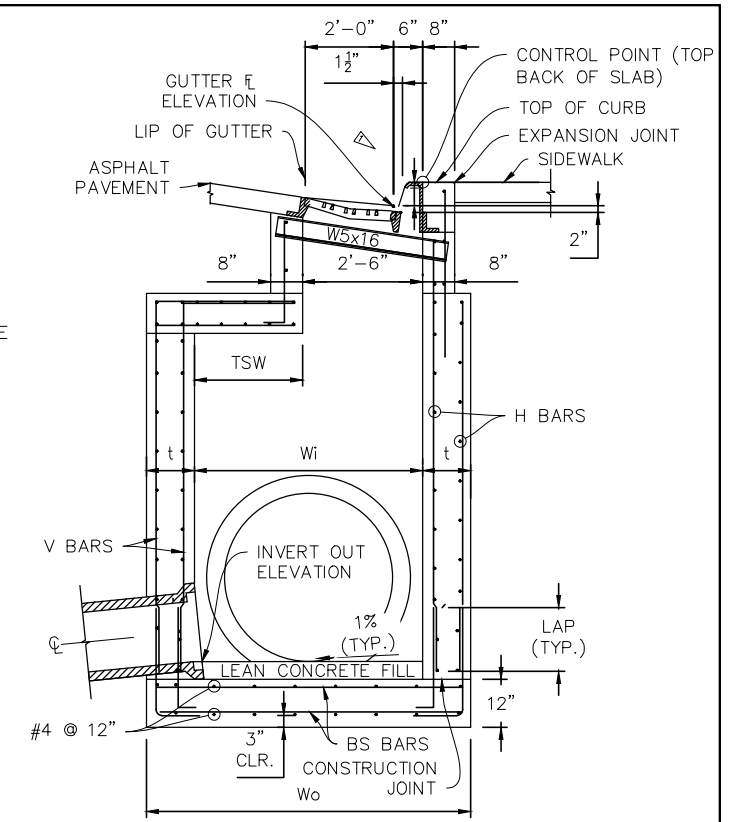
VC PER DETAIL CG-1

SECTION A-A

MS PER DETAIL CG-1

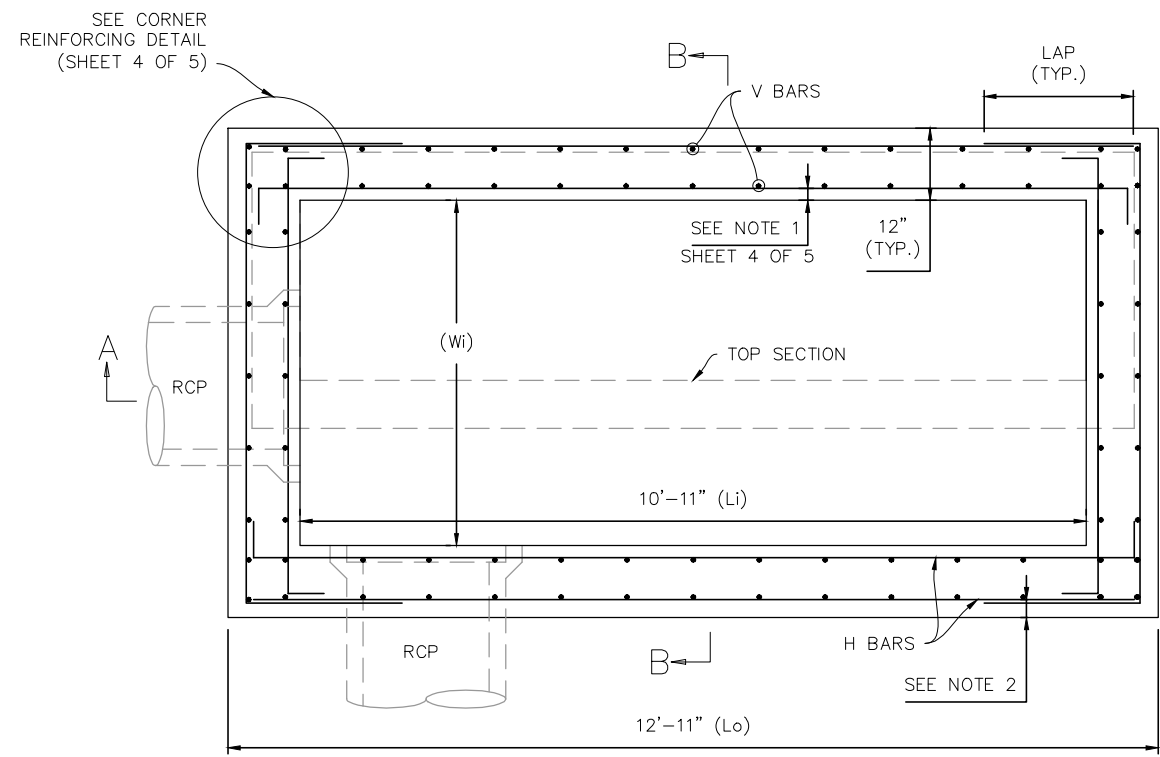
'T' = THROAT OPENING  
 'T' = 6" FOR 6" VERTICAL CURB & GUTTER  
 'T' = 5" FOR COMBINATION CURB & GUTTER SIDEWALK  
 DROP FROM GUTTER ELEVATION TO GRATE ELEVATION (TRANSITION) IS 2".

#6 @ 8" T.F.  
 #7 @ 6" B.F.

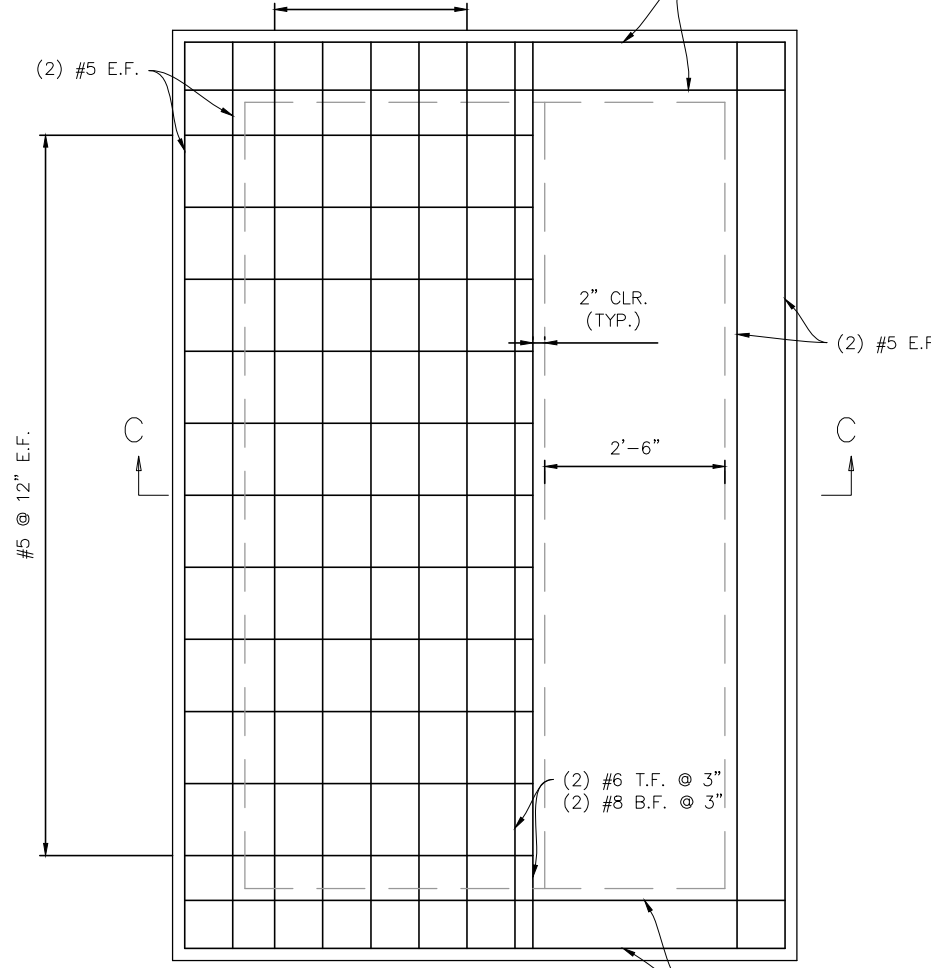


SECTION B-B

SEE SHEET 5 OF 5 FOR FRAME, GRATE & ADJUSTABLE CURB BOX DETAIL

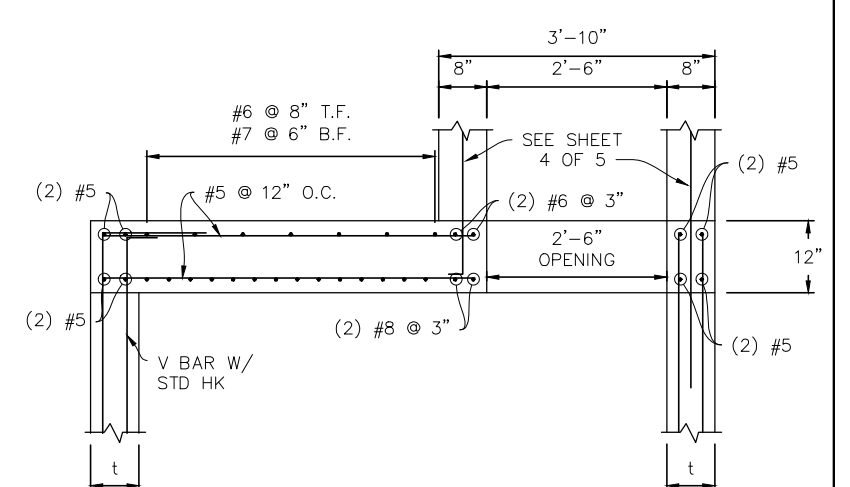


BOX BASE PLAN



PLAN

TRIPLE INLET TOP SLAB



SECTION C-C

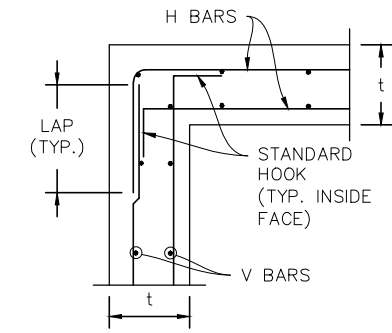
RCP Diameter	Inside Length (Li)	Inside Width (Wi)	Wall Thickness (t)	Outside Length (Lo)	Outside Width (Wo)	Top Slab Width (TSW)	# of Reinforcing Faces	H Bars	V Bars	BS Bars	Lap Splice Length (Lap)
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84"	10'-11"	9'-0"	12"	12'-11"	11'-0"	6'-6"	2	#5 @ 9"	#5 @ 11"	#5 @ 9"	2'-3"

Sheet Revisions	
Date	Comments

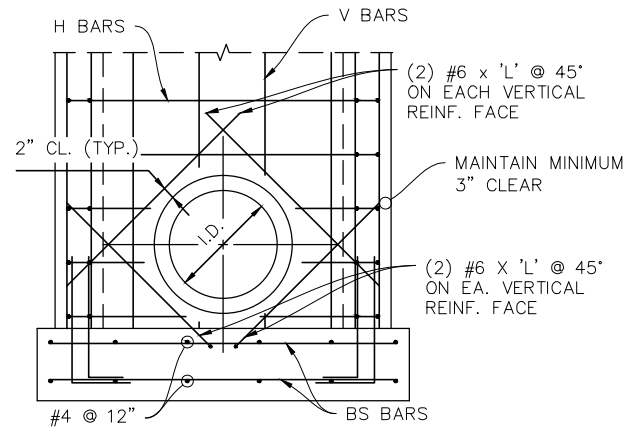
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**TYPE 16 TRIPLE INLET**  
 Issued By: Town of Castle Rock, Development Services May 17, 2017

**DETAIL PLAN NO. SD-3**  
 Sheet 3 of 5

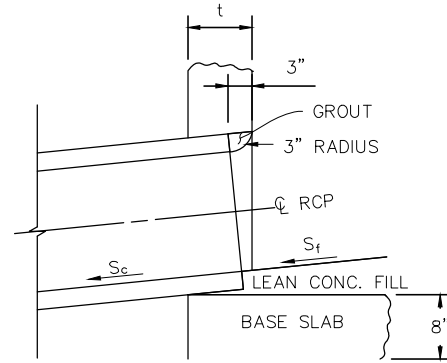


**DETAIL  
CORNER REINFORCING**



NOTE:  
L = EXTEND BAR MAXIMUM LENGTH @ 45° MAINTAINING 3" CLEAR

**REBAR PLACEMENT INLET  
WALL PENETRATION (TYP.)**

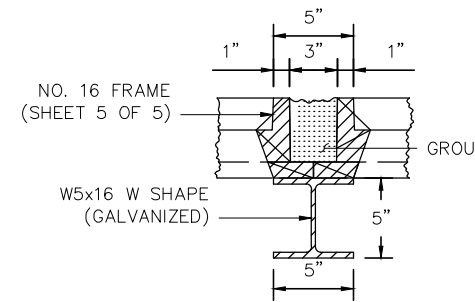


**DETAIL  
CONNECTION OUTLET**

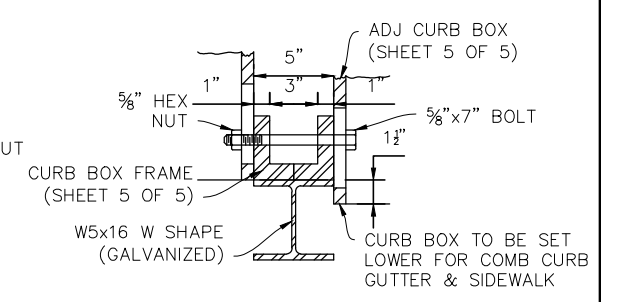
CONTRACTOR TO NOTCH & BLOCK OUT AROUND PIPE OPENING AND FORM SMOOTH RADIUS AROUND PIPE WITH NON SHRINK GROUT.

\* NOTE  
TURN INTO PLANE  
OF WALL

**CURB BOX BEAM  
ANCHOR BAR (TYP.)**

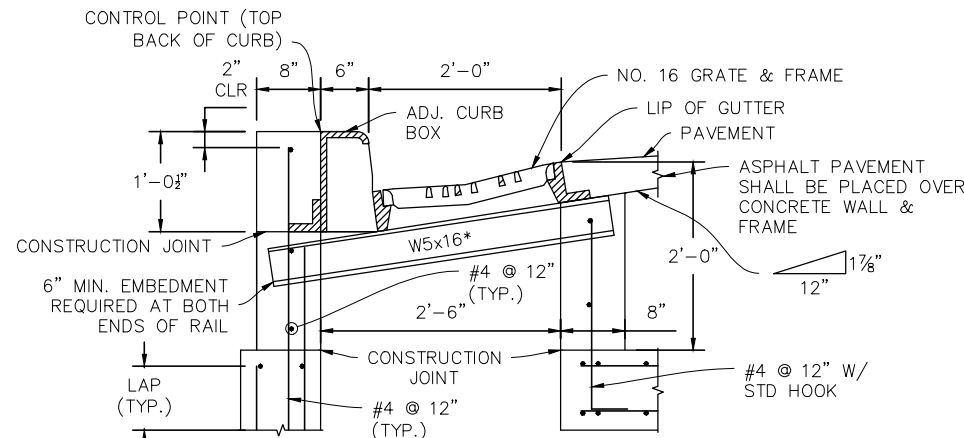


**FRAME PLACEMENT ON  
SUPPORT RAIL (TYP.)**

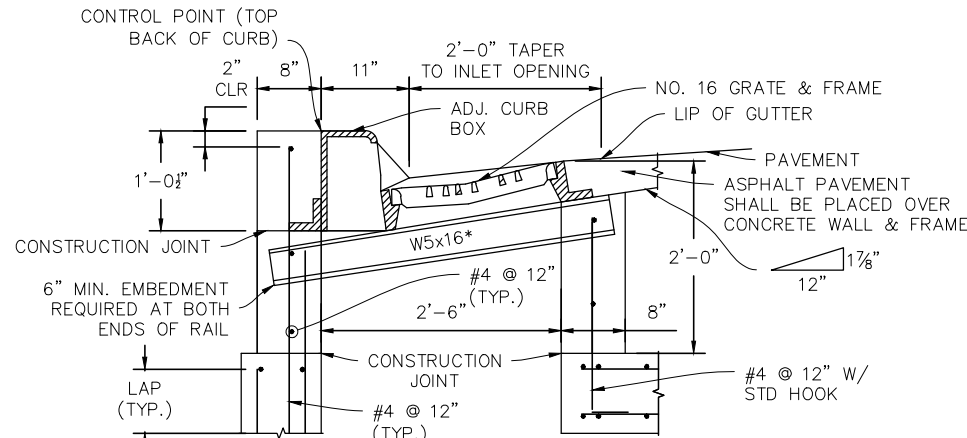


**FRAME PLACEMENT OF ADJ. CURB  
BOX ON SUPPORT RAIL (TYP.)**

FOR DOUBLE AND TRIPLE INLETS ONLY



**VC PER DETAIL CG-1**



**MS PER DETAIL CG-1**

**TOP SECTION DETAILS**  
\*W5x16 FOR DOUBLE & TRIPLE INLET ONLY

**TYPE 16 INLET GENERAL NOTES**

- INSIDE FACE REINFORCING CLEARANCE:  
- 2 FACES = 2"  
- 1 FACE = 3 1/2"
- OUTSIDE FACE REINFORCING CLEARANCE:  
- 2 FACES = 2"  
- 1 FACE = t-3 1/2"
- CAST-IN-PLACE INLETS SHALL BE CONCRETE CLASS B.
- PRECAST INLETS AND REINFORCEMENT SHALL CONFORM TO ASTM C 478 (AASHTO M 199).
- FLOW CHANNELS AND INVERTS SHALL BE FORMED BY SHAPING CLASS B CONCRETE OR APPROVED GROUT.
- EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3/4".
- FLOOR SLOPE MAY BE POURED MONOLITHIC WITH BASE.
- SEE INLET TYPE 16 GRATE & FRAME FOR FRAME, GRATE & ADJUSTABLE CURB BOX DETAILS (SHEET 5 OF 5).
- ALL REINFORCING STEEL SHALL BE ASTM A-615, GRADE 60 DEFORMED BARS. ALL REINFORCING SHALL BE EPOXY COATED.
- INLET WALLS SHALL BE FORMED BOTH INSIDE AND OUTSIDE. CASTING OF SIDEWALLS AGAINST EARTH IS NOT PERMITTED.
- THE CONTRACTOR SHALL STAMP FLOW ARROWS INTO THE TOP SURFACE OF THE INLET BOX SIDEWALLS TO INDICATE THE DIRECTION OF GUTTER FLOW. THESE STAMPED ARROWS SHALL BE 6 INCHES LONG, 1 INCH HIGH AND 3/8 INCH DEEP. FOR INLETS IN SUMP CONDITIONS, THE STAMPED FLOW ARROW SHALL INDICATE THE PREDOMINANT DIRECTION OF STORM RUNOFF.
- STEPS SHALL BE PROVIDED WHEN INLET DIMENSIONS "H" EXCEEDS 3'-6" AND SHALL BE IN ACCORDANCE WITH AASHTO M 199.
- SUB-GRADE SHALL BE A GRADATION EQUAL TO CLASS B BEDDING COMPACTED TO 95% MAXIMUM DRY DENSITY. AASHTO DESIGNATION T-180.
- SUB-GRADE SHALL BE SHAPED UNDISTURBED MATERIAL OR OVEREXCAVATED AND BACKFILLED WITH CLASS B BEDDING MATERIAL, COMPACTED PER NOTE 13.

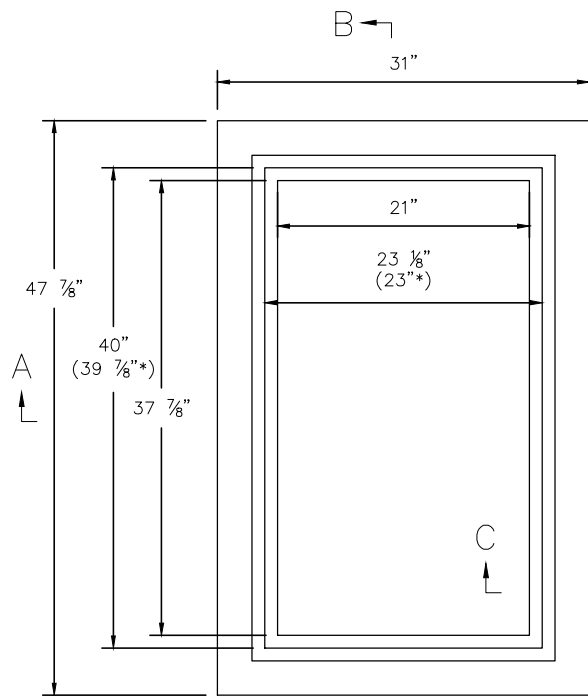
Sheet Revisions	
Date	Comments



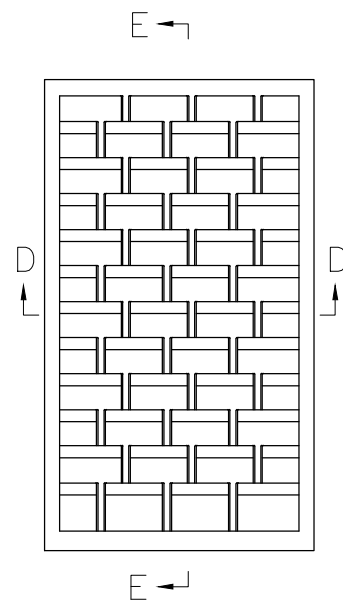
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**TYPE 16  
DETAILS**  
Issued By: Town of Castle Rock, Development Services May 17, 2017

**DETAIL PLAN NO.**  
SD-3  
Sheet 4 of 5

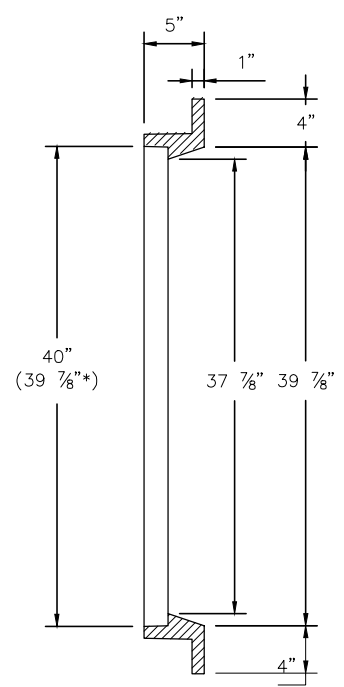


PLAN - FRAME

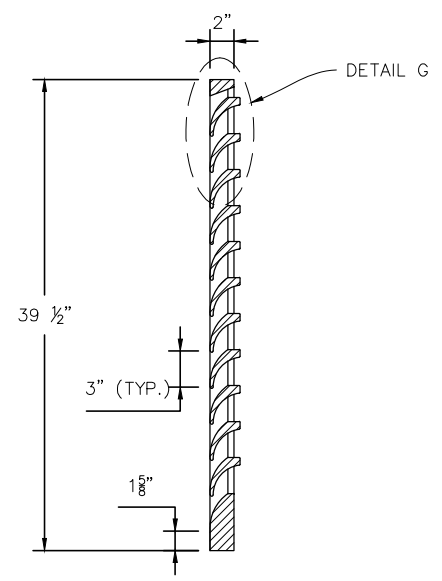


PLAN - GRATE

\* CLEAR SEAT OPENING



SECTION E-E

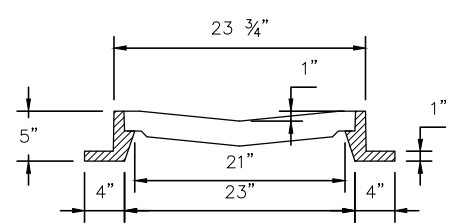


SECTION B-B

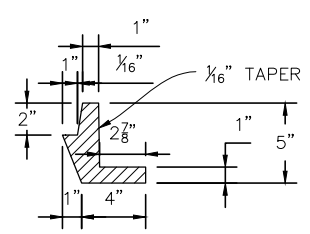
**GENERAL NOTES**

1. CAST IRON SHALL CONFORM TO ASTM A48. (CLASS 35B, MINIMUM)
2. CASTINGS SHALL COMPLY WITH FEDERAL SPECIFICATION RR-F-621D FOR CASTING PROOF LOADING (HEAVY DUTY).
3. ALL CASTINGS REQUIRE INDIVIDUAL APPROVAL/CERTIFICATION FROM THIS DIVISION.
4. CASTINGS SHALL NOT BE DIPPED OR PAINTED PRIOR TO FINAL INSPECTION. ONCE INDIVIDUAL CASTINGS ARE CHECK AND APPROVED BY THE DIVISION FOR PROJECT USAGE, THEY SHALL BE COATED WITH AN APPROVED MATERIAL.

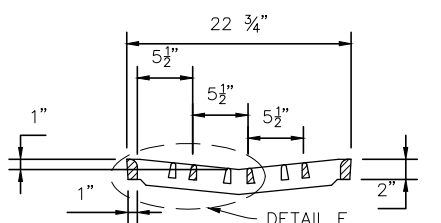
**TYPE 16 INLET GRATE AND FRAME**



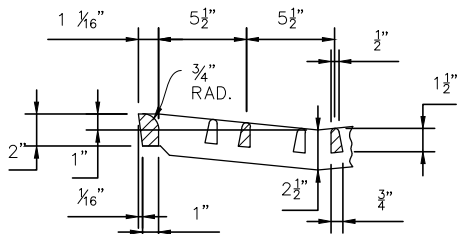
SECTION A-A



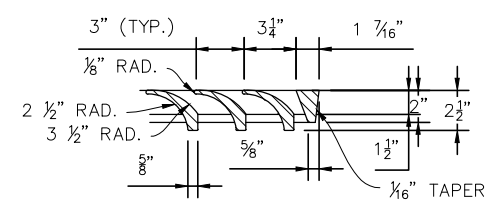
SECTION C-C



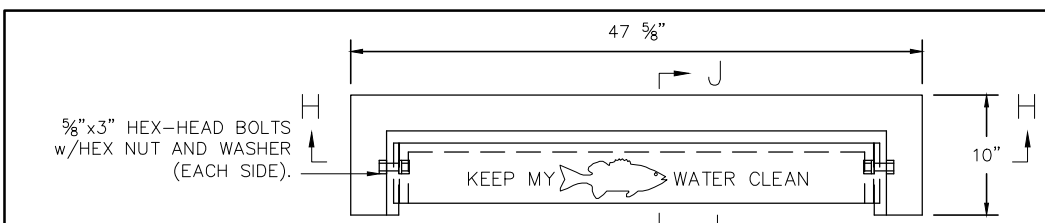
SECTION D-D



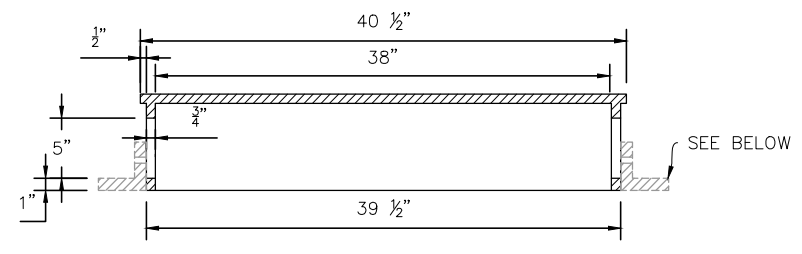
DETAIL F



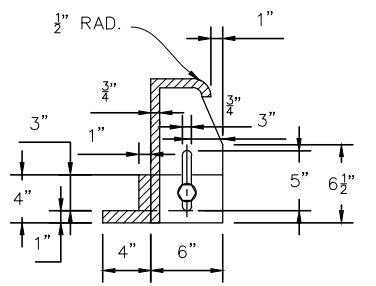
DETAIL G



SECTION D - PLAN



SECTION H-H



SECTION J-J

**ADJUSTABLE CURB BOX**  
MINIMUM CURB OPENING AREA = 150 IN<sup>2</sup>

Sheet Revisions	
Date	Comments

**Town of Castle Rock**  
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**TYPE 16 GRATE & FRAME**  
**ADJUSTABLE CURB BOX DETAILS**  
Issued By: Town of Castle Rock, Development Services May 17, 2017

**DETAIL PLAN NO.**  
SD-3  
Sheet 5 of 5