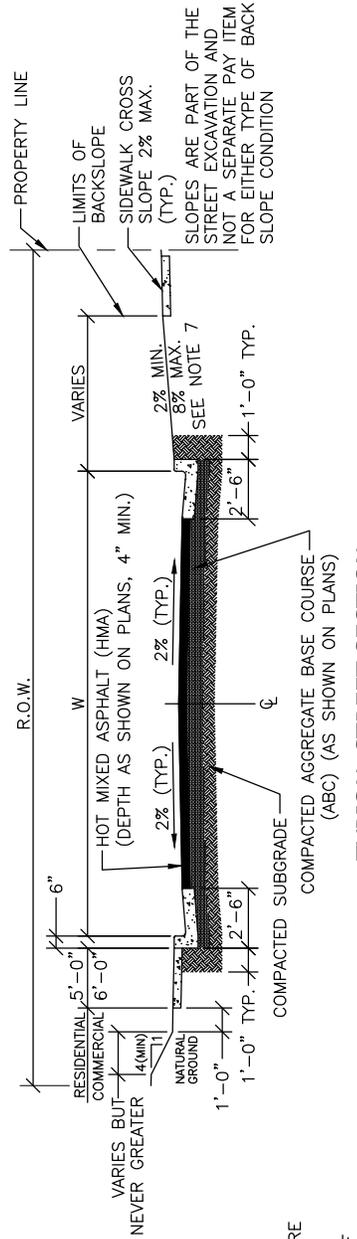


NOTE: R.O.W. WIDTH AND DIMENSION "W" TO BE SHOWN ON THE PLANS



TYPICAL STREET SECTION

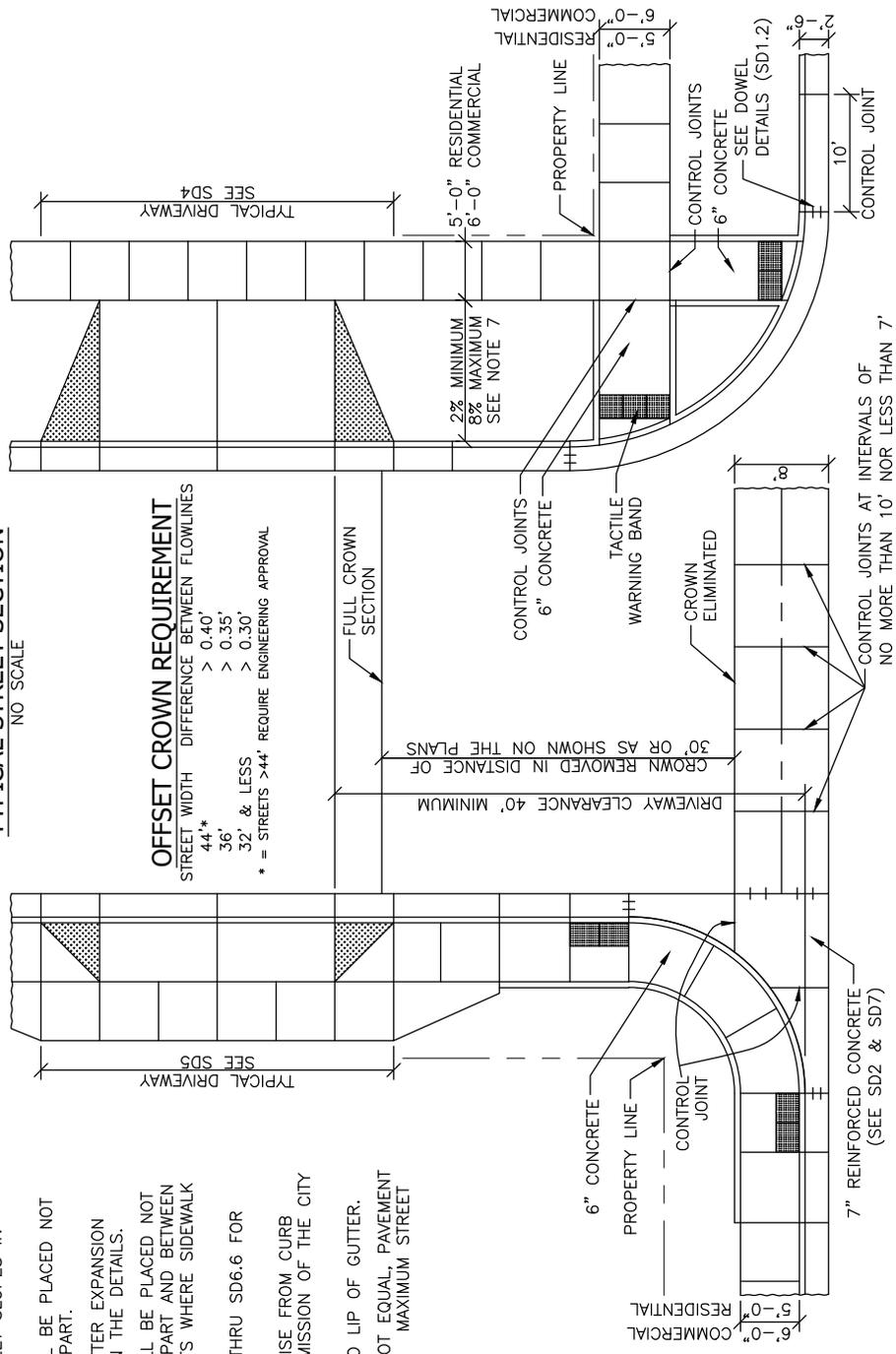
NO SCALE

OFFSET CROWN REQUIREMENT

STREET WIDTH DIFFERENCE BETWEEN FLOWLINES
 44' > 0.40
 36' > 0.35'
 32' & LESS > 0.30'
 * = STREETS > 44' REQUIRE ENGINEERING APPROVAL

FULL CROWN SECTION

DRIVEWAY CLEARANCE 40' MINIMUM
 50' OR AS SHOWN ON THE PLANS
 CROWN REMOVED IN DISTANCE OF



PLAN OF TYPICAL STREET INTERSECTION

NO SCALE

- NOTES:**
1. ALL UTILITY FIXTURES ENCRANCHING ON CONSTRUCTION ARE TO BE MOVED BY OTHERS.
 2. 3" EXPANSION JOINTS SHALL BE PLACED AT INTERVALS OF NOT MORE THAN ONE HUNDRED (100) FEET SLOPES IN SIDEWALKS.
 3. DOUBLE GUTTER EXPANSION JOINTS SHALL BE PLACED NOT MORE THAN TWO HUNDRED (200) FEET APART.
 4. ALL CURB AND GUTTER AND DOUBLE GUTTER EXPANSION JOINTS SHALL BE DOWELED AS SHOWN IN THE DETAILS.
 5. CURB & GUTTER EXPANSION JOINTS SHALL BE PLACED NOT MORE THAN TWO HUNDRED (200) FEET APART AND BETWEEN CURB & GUTTER AND SIDEWALK AT POINTS WHERE SIDEWALK ABUTS BUILDING.
 6. SEE CURB RAMP DETAILS SD4 & SD6.1 THRU SD6.6 FOR ADDITIONAL REQUIREMENTS.
 7. ADA REQUIREMENTS CONTROL MAXIMUM RISE FROM CURB HEAD. MAY EXCEED 8% ONLY WITH PERMISSION OF THE CITY ENGINEER.
 8. SLOPE PAVEMENT AT 2% FROM CROWN TO LIP OF GUTTER.
 9. WHEN THE FLOW LINE ELEVATIONS ARE NOT EQUAL, PAVEMENT SHALL BE SLOPED 2% FROM HIGHER LIP. MAXIMUM STREET CROSS GRADE SHALL NOT EXCEED 4%.

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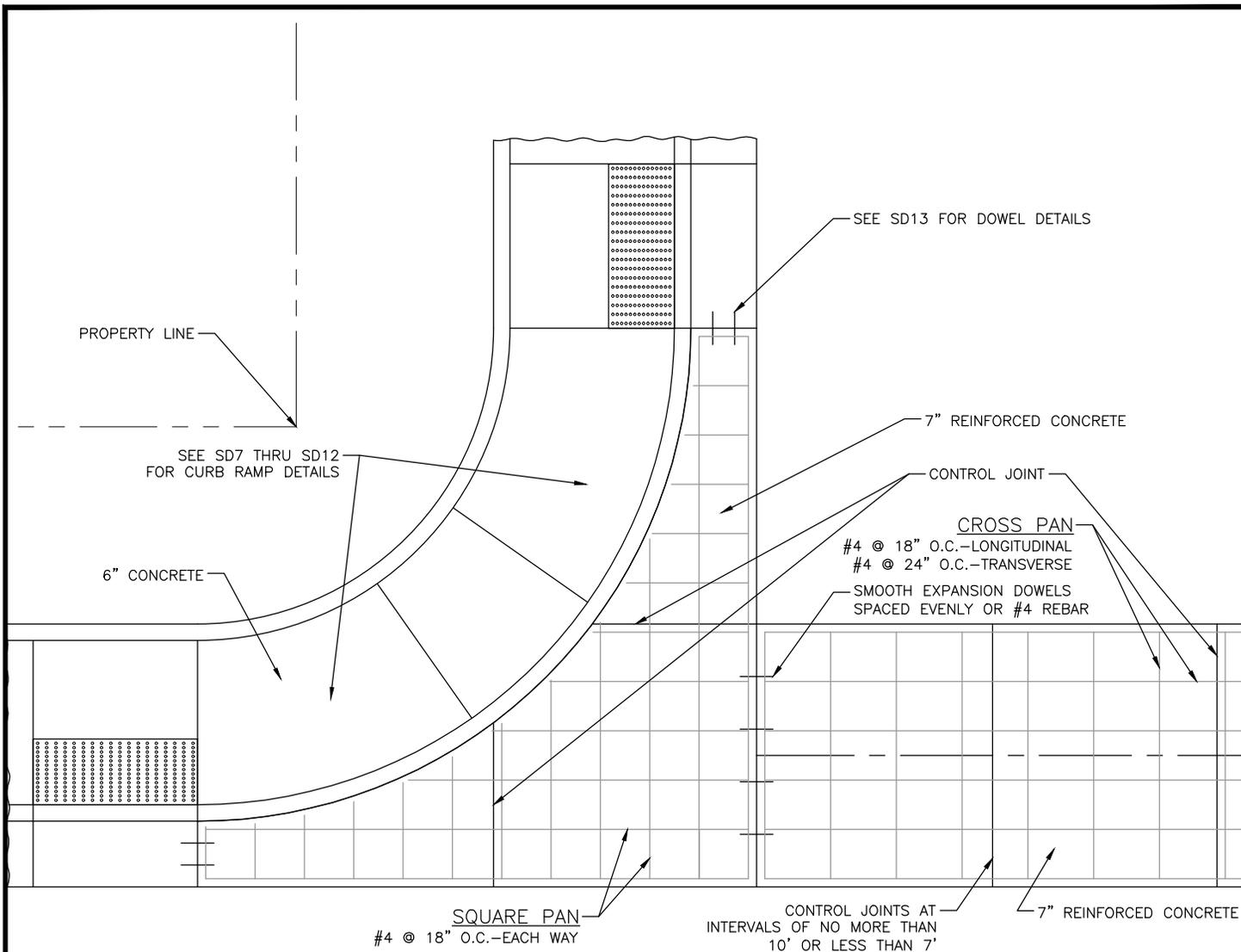


TYPICAL STREET INTERSECTION

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
 211 EAST "D" ST. PUEBLO, CO 81003
 (719) 553-2295 PHONE

SD1

DRAWN BY: JM
 CHECKED BY: BQ
 APPROVED BY: CR



PLAN OF TYPICAL SQUARE PAN & CROSS PAN

SCALE: 1"=5'-0"

NOTES:

1. THE CONTRACTOR SHALL USE #4-GRADE 60 REINFORCING BARS.
2. ALL REINFORCING SHALL BE SECURELY TIED AND PROPERLY SUPPORTED USING APPROVED CHAIRS.
3. DOUBLE GUTTER EXPANSION JOINTS SHALL BE PLACED NOT MORE THAN TWO HUNDRED (200) FEET APART.
4. ALL CURB AND GUTTER AND DOUBLE GUTTER EXPANSION JOINTS SHALL BE DOWELED AS SHOWN IN THE DETAILS. (SEE SD13 FOR DOWELED DETAILS)
5. SEE CURB RAMP DETAILS FOR CONTROL AND EXPANSION JOINT LOCATIONS AT CORNERS.

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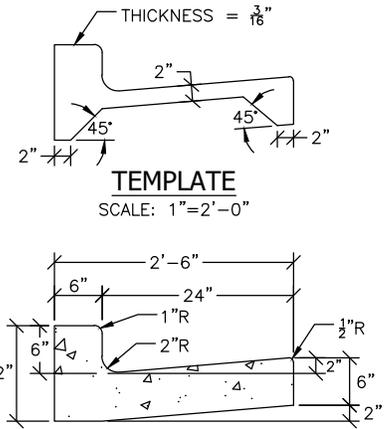
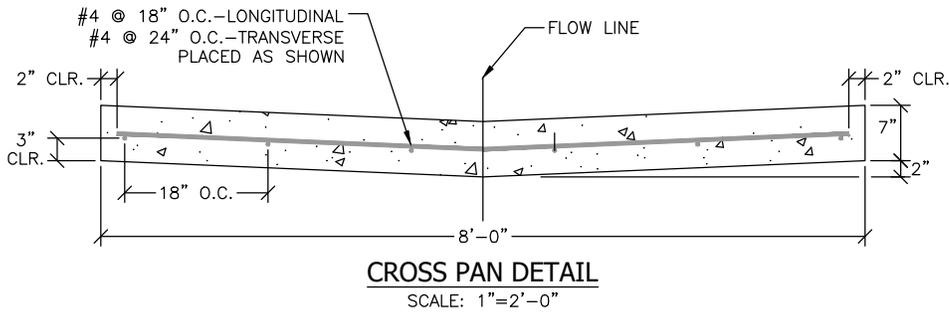


SQUARE PAN & CROSS PAN DETAIL

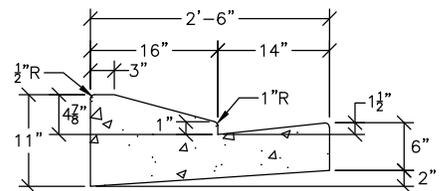
PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

SD2

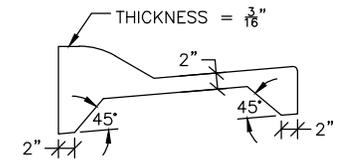
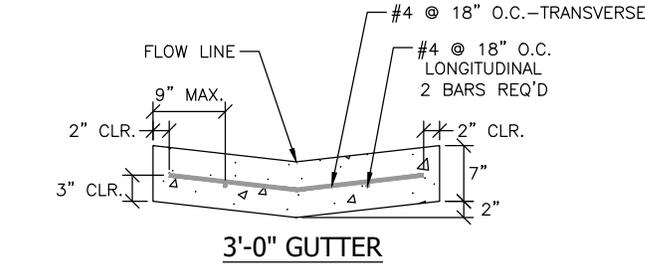
DRAWN BY: JM
CHECKED BY: BQ
APPROVED BY: CR



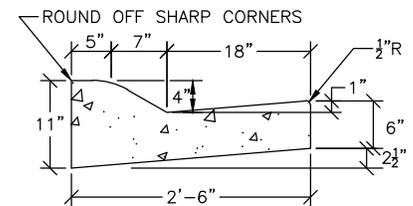
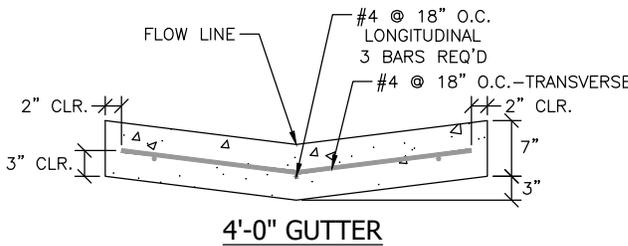
STANDARD CURB & GUTTER
SCALE: 1"=2'-0"



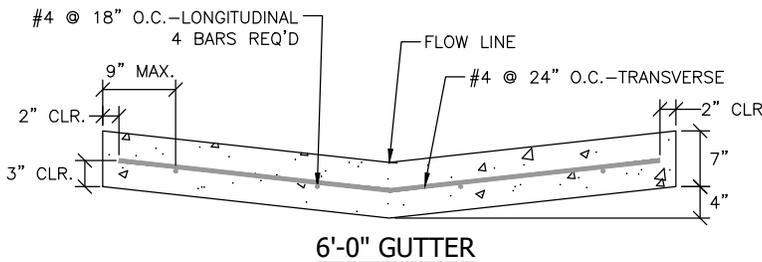
MODIFIED RAMP CURB & GUTTER
SCALE: 1"=2'-0"



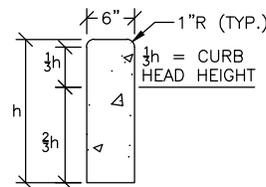
TEMPLATE
SCALE: 1"=2'-0"



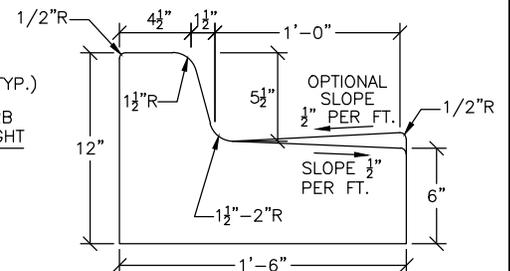
ROLLED CURB & GUTTER
SCALE: 1"=2'-0"



DOUBLE GUTTER DETAILS
SCALE: 1"=2'-0"



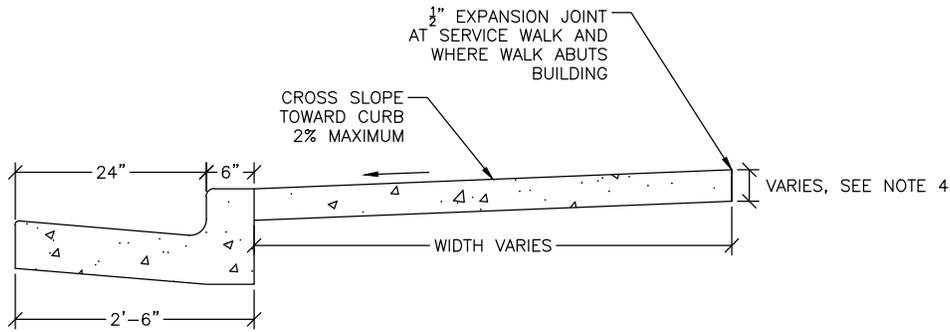
6" CURB HEAD
SCALE: 1"=2'-0"



CURB & GUTTER TYPE 2
SECT. 1-B
SCALE: 1"=1'-0"

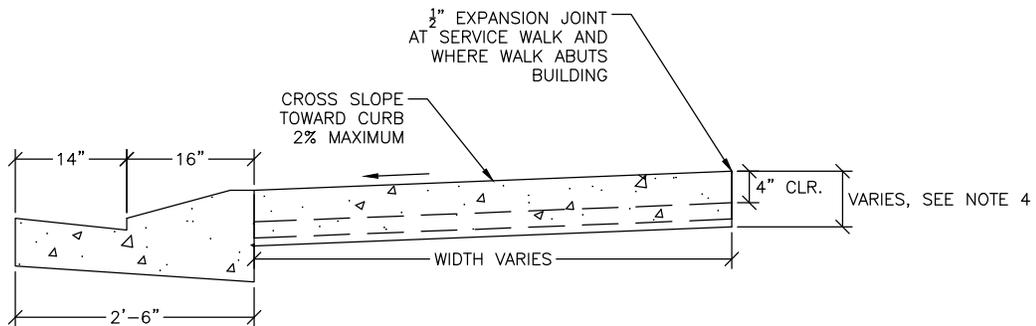
NOTES:

1. PROVIDE 2-#4 REINFORCING BARS IN GUTTER SECTIONS AT ALLEYS - SEE SD5 & SD6.
2. PROVIDE TOOLED CONTROL JOINTS @ 10' O.C. ALL CURB AND GUTTER SHALL HAVE EXPANSION JOINTS AT 200 FEET O.C.-MAXIMUM.
3. SEE APPLICABLE DETAILS FOR GUTTER SLOPE MODIFICATIONS AT CURB RAMPS.



SIDEWALK DETAIL

SCALE: 1"=2'-0"



SIDEWALK DETAIL

SCALE: 1"=2'-0"

NOTES:

1. THAT PORTION OF ANY SIDEWALK AT A DRIVEWAY CROSSING OR AT ANY PROBABLE DRIVEWAY CROSSING MUST BE AT LEAST 6" THICK. THIS REGULATION APPLIES TO ALL NEW SIDEWALK CONSTRUCTION AND ALL SIDEWALK REPLACEMENT.
2. 1/2" EXPANSION JOINTS SHALL BE PLACED AT INTERVALS OF NOT MORE THAN ONE HUNDRED (100) FEET APART IN SIDEWALKS.
3. CONTROL JOINTS ARE TO BE AT 5' UNLESS OTHERWISE DIRECTED BY THE CITY.
4. SIDEWALK CONCRETE THICKNESS IS TO BE CONSTRUCTED AT 7" REINFORCED AT COMMERCIAL DRIVEWAYS AND ALLEYS; 6" AT RESIDENTIAL DRIVEWAYS AND 4" AT ALL OTHER LOCATIONS.

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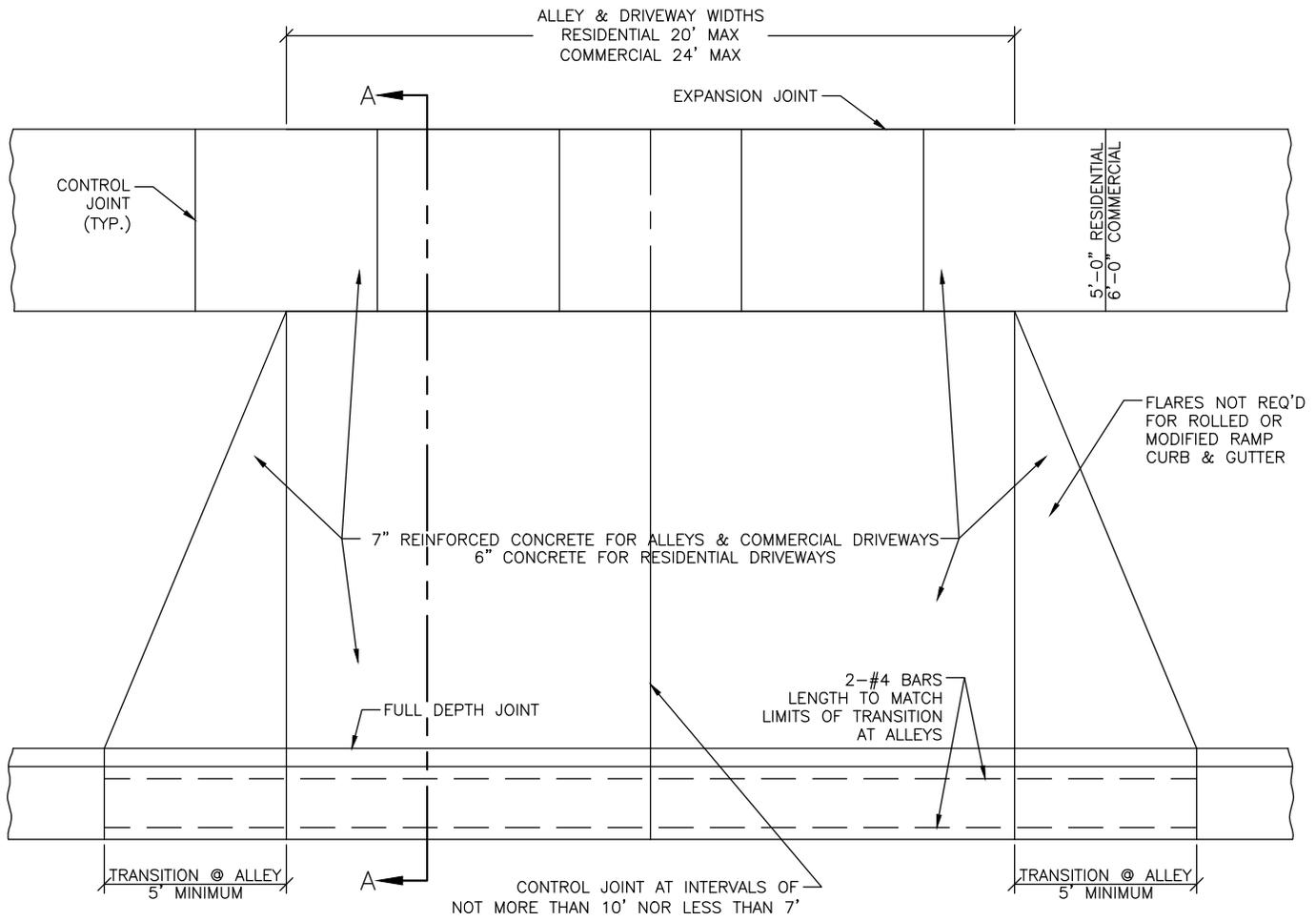


ATTACHED SIDEWALK DETAILS

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
 211 EAST "D" ST. PUEBLO, CO 81003
 (719) 553-2295 PHONE

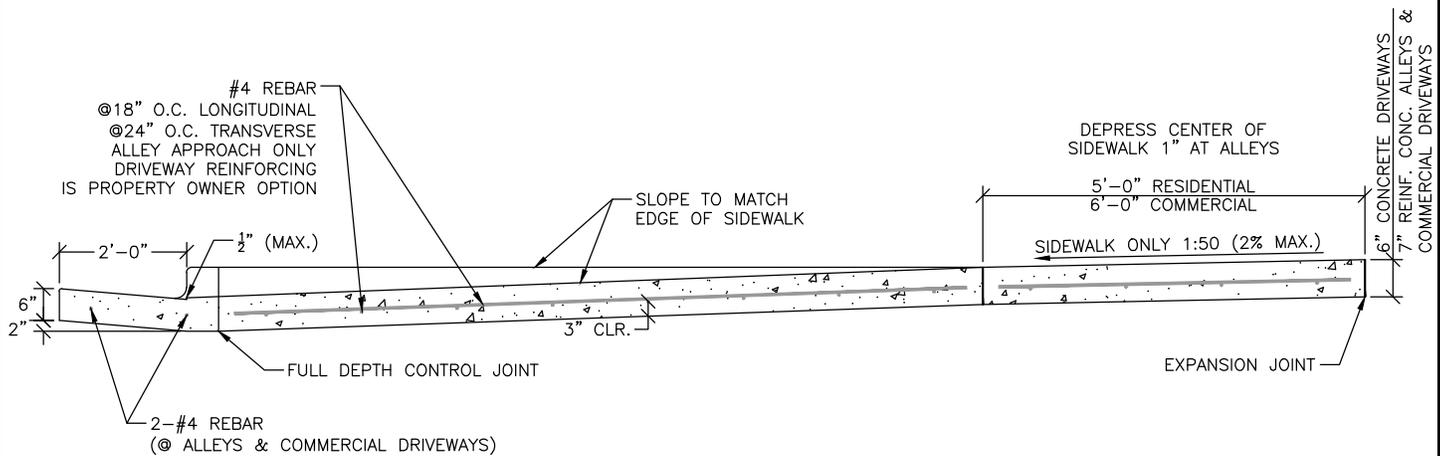
SD4

DRAWN BY: JM
 CHECKED BY: BQ
 APPROVED BY: CR



PLAN OF TYPICAL ALLEY APPROACH & DRIVEWAY DETAIL FOR SETBACK SIDEWALK

SCALE: 1"=5'-0"



SECTION A-A - ALLEY & DRIVEWAY GUTTER DETAIL

SCALE: 1"=3'-0"

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10/17/2022
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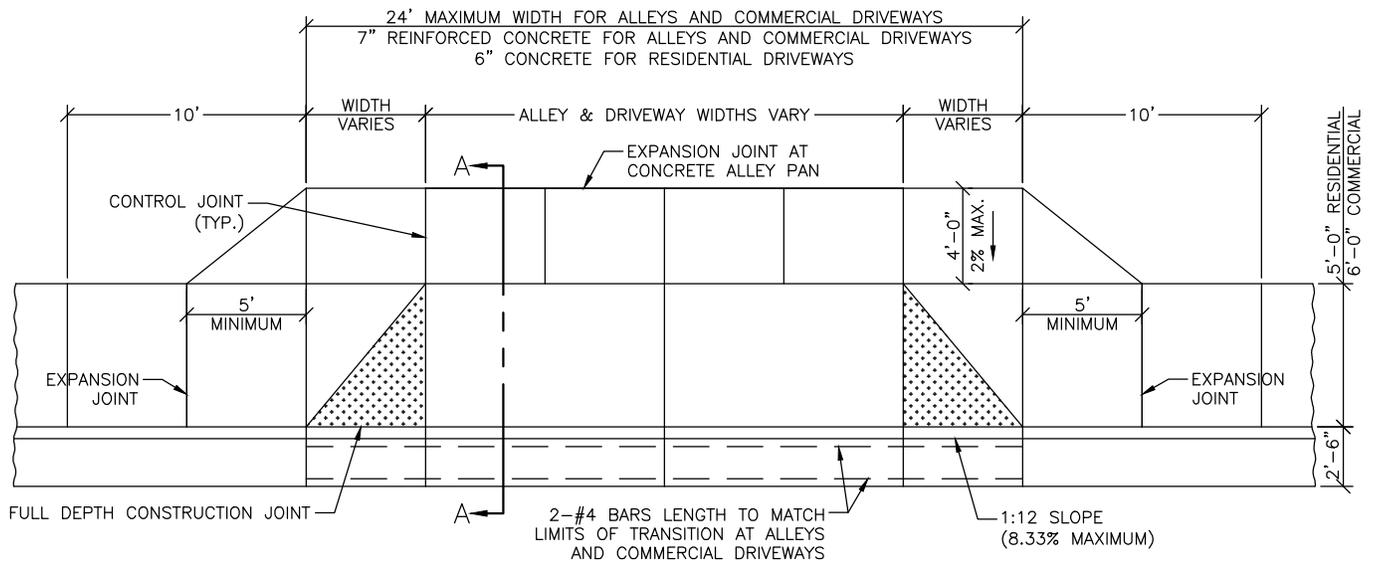


TYPICAL ALLEY APPROACH & DRIVEWAY DETAIL FOR SETBACK SIDEWALK

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
 211 EAST "D" ST. PUEBLO, CO 81003
 (719) 553-2295 PHONE

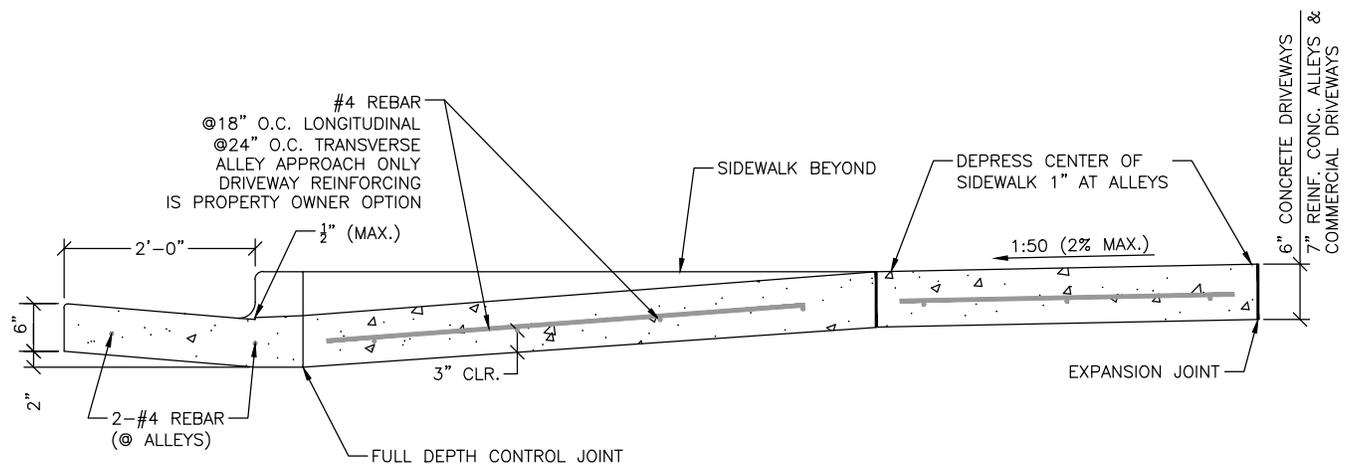
SD5

DRAWN BY: JM
 CHECKED BY: BQ
 APPROVED BY: CR



PLAN OF TYPICAL ALLEY APPROACH & DRIVEWAY DETAIL FOR ATTACHED SIDEWALK

SCALE: 1"=8'-0"



SECTION A-A - ALLEY & DRIVEWAY GUTTER DETAIL

SCALE: 1"=2'-0"

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REVISION

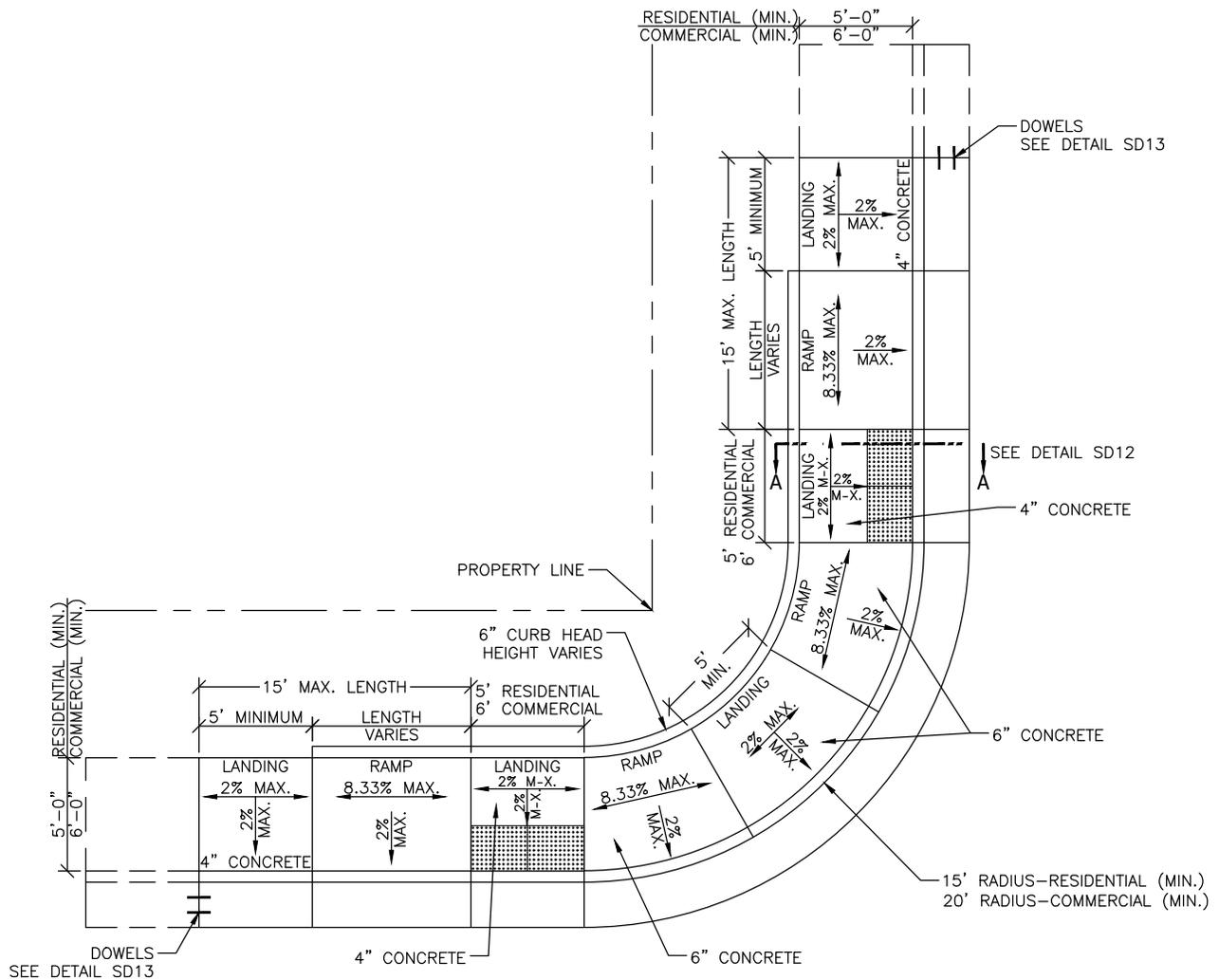


TYPICAL ALLEY APPROACH & DRIVEWAY DETAIL FOR ATTACHED SIDEWALK

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

SD6

DRAWN BY: JM
CHECKED BY: BQ
APPROVED BY: CR



TYPE A RAMP

SCALE: 1"=8'-0"

NOTES:

1. ALL CURB RAMPS SHALL BE CONSTRUCTED TO CONFORM TO ALL APPLICABLE PROVISIONS OF THE PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) LATEST EDITION.
2. RAMP SLOPES SHALL NOT BE STEEPER THAN 8.33%. DIMENSIONS AND OR ARRANGEMENTS SHOWN SHALL BE MODIFIED AS NECESSARY TO MEET THIS REQUIREMENT.
3. LOCATION OF RAMPS MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
4. ALL CROSS SLOPES SHALL NOT EXCEED 2%.

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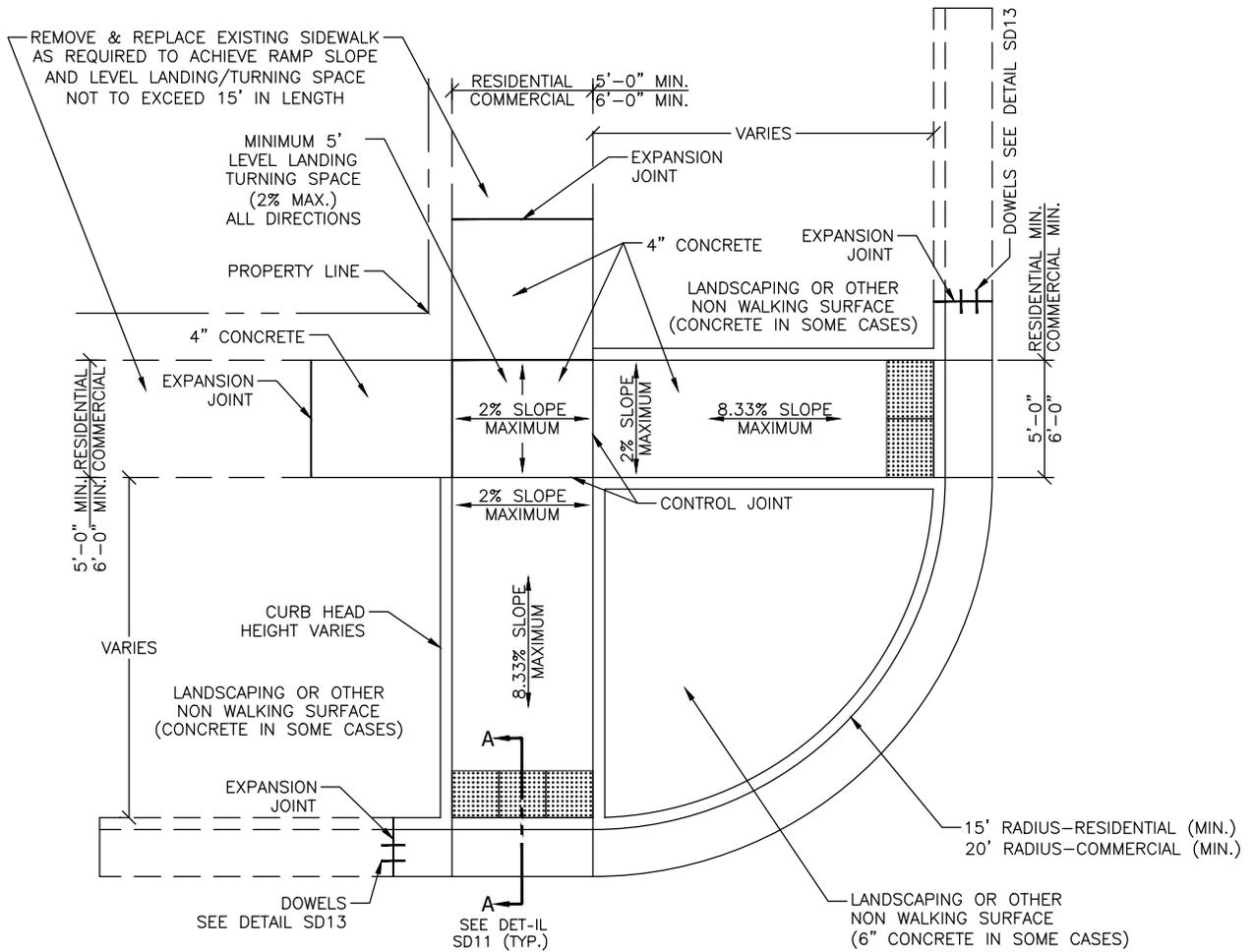


CURB RAMP DETAILS - TYPE A RAMP

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
 211 EAST "D" ST. PUEBLO, CO 81003
 (719) 553-2295 PHONE

SD7

DRAWN BY: JM
 CHECKED BY: BQ
 APPROVED BY: CR



TYPE B RAMP

SCALE: 1"=8'-0"

NOTES:

1. ALL CURB RAMPS SHALL BE CONSTRUCTED TO CONFORM TO ALL APPLICABLE PROVISIONS OF THE PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) LATEST EDITION.
2. RAMP SLOPES SHALL NOT BE STEEPER THAN 8.33%. DIMENSIONS AND OR ARRANGEMENTS SHOWN SHALL BE MODIFIED AS NECESSARY TO MEET THIS REQUIREMENT.
3. LOCATION OF RAMPS MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
4. ALL CROSS SLOPES SHALL NOT EXCEED 2%.

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10/17/2022
REVISION

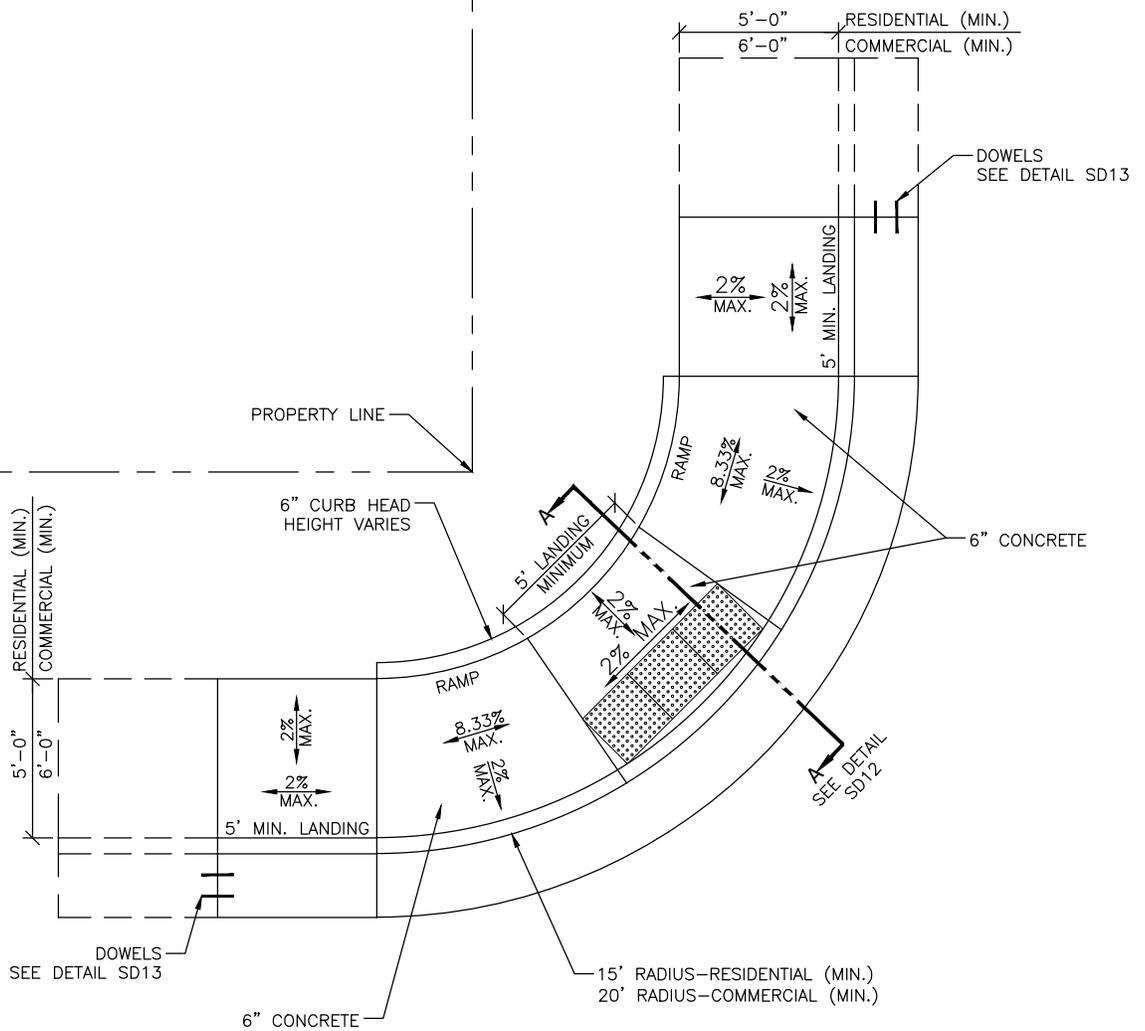


CURB RAMP DETAILS - TYPE B RAMP

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

SD8

DRAWN BY: JM
CHECKED BY: BQ
APPROVED BY: CR



TYPE C RAMP

SCALE: 1"=6'-0"

NOTES:

1. ALL CURB RAMPS SHALL BE CONSTRUCTED TO CONFORM TO ALL APPLICABLE PROVISIONS OF THE PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) LATEST EDITION.
2. RAMP SLOPES SHALL NOT BE STEEPER THAN 8.33%. DIMENSIONS AND OR ARRANGEMENTS SHOWN SHALL BE MODIFIED AS NECESSARY TO MEET THIS REQUIREMENT.
3. LOCATION OF RAMPS MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
4. ALL CROSS SLOPES SHALL NOT EXCEED 2%.

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REVISION

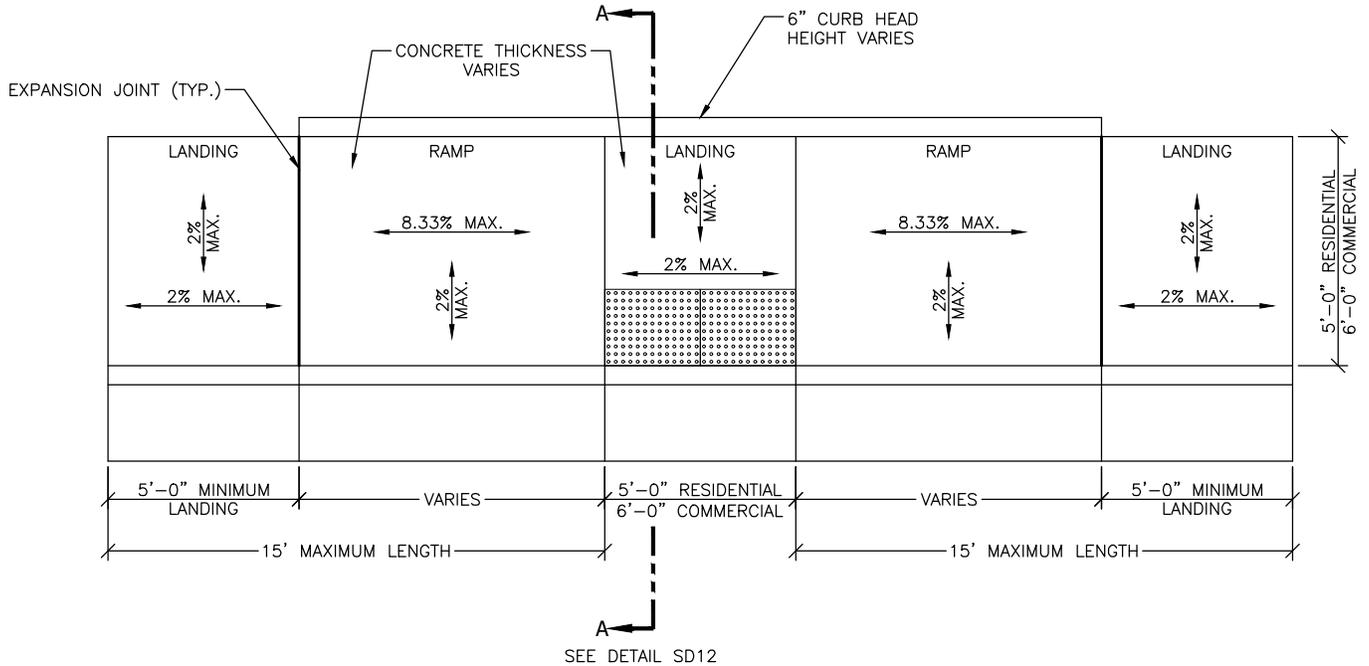


CURB RAMP DETAILS - TYPE C RAMP

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
 211 EAST "D" ST. PUEBLO, CO 81003
 (719) 553-2295 PHONE

SD9

DRAWN BY: JM
 CHECKED BY: BQ
 APPROVED BY: CR

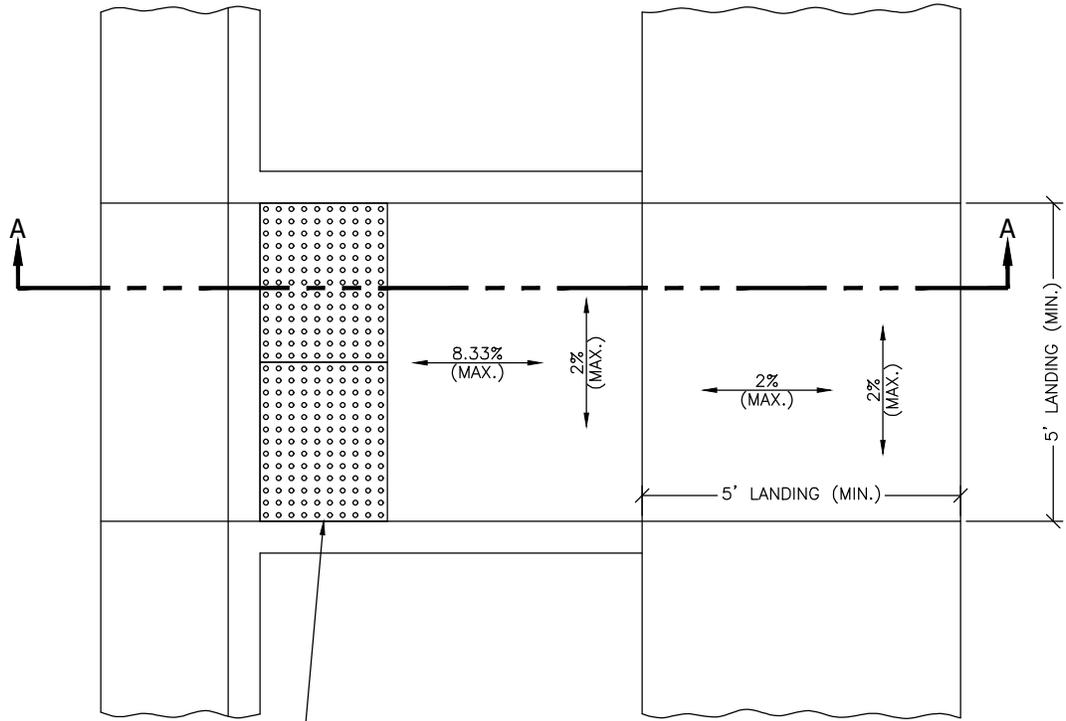


TYPE D RAMP

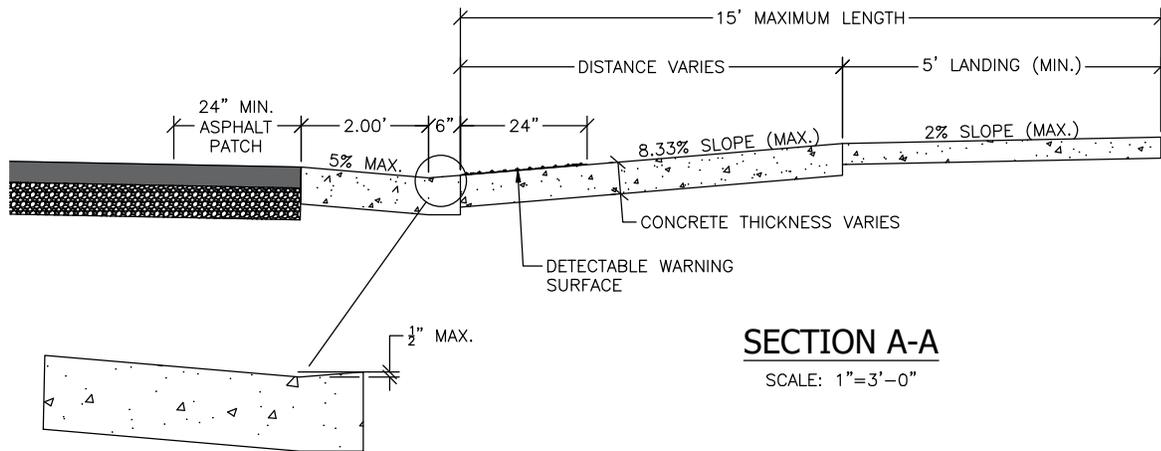
SCALE: 1"=5'-0"

NOTES:

1. ALL CURB RAMPS SHALL BE CONSTRUCTED TO CONFORM TO ALL APPLICABLE PROVISIONS OF THE PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) LATEST EDITION.
2. RAMP SLOPES SHALL NOT BE STEEPER THAN 8.33%. DIMENSIONS AND OR ARRANGEMENTS SHOWN SHALL BE MODIFIED AS NECESSARY TO MEET THIS REQUIREMENT.
3. LOCATION OF RAMPS MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
4. ALL CROSS SLOPES SHALL NOT EXCEED 2%.

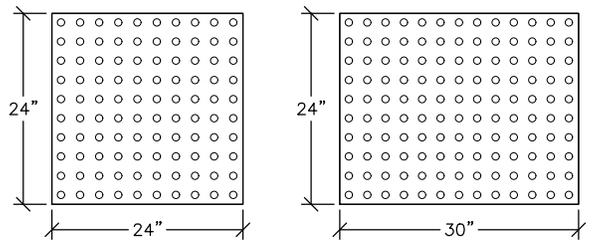


DETECTABLE WARNING SURFACES SHALL BE 24" WIDE AT THE BOTTOM OF EACH RAMP (UNLESS SHOWN OTHERWISE) AND SHALL EXTEND THE FULL WIDTH OF THE RAMP. SEE STANDARD DETAIL SD6.1 THRU SD6.4



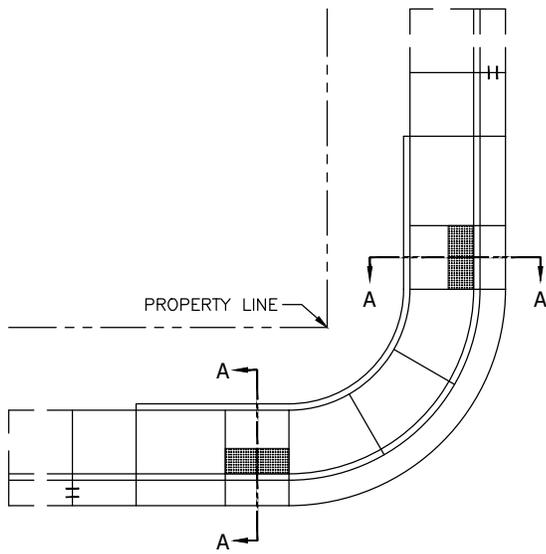
NOTES:

1. DETECTABLE WARNING SURFACES SHALL COMPLY WITH SECTION R305 OF THE PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) LATEST EDITION.
2. ALL CURB RAMPS SHALL BE CONSTRUCTED TO CONFORM TO ALL APPLICABLE PROVISIONS OF THE PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) LATEST EDITION.
3. RAMP SLOPES SHALL NOT BE STEEPER THAN 8.33%. DIMENSIONS AND OR ARRANGEMENTS SHOWN SHALL BE MODIFIED AS NECESSARY TO MEET THIS REQUIREMENT.
4. LOCATION OF RAMPS MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
5. ALL CROSS SLOPES SHALL NOT EXCEED 2%.



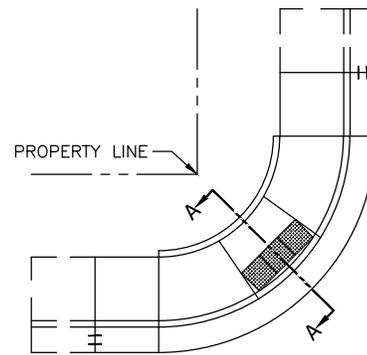
DETECTABLE WARNING SURFACE

SCALE: 1"=2'-0"



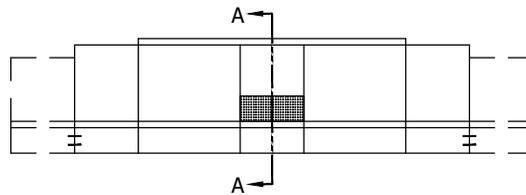
TYPE A RAMP

SCALE: 1"=15'-0"



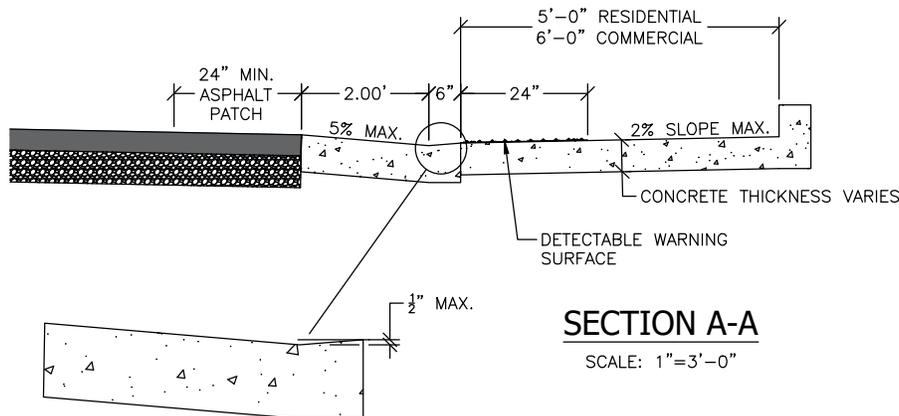
TYPE C RAMP

SCALE: 1"=15'-0"



TYPE D RAMP

SCALE: 1"=15'-0"



SECTION A-A

SCALE: 1"=3'-0"

NOTES:

1. DETECTABLE WARNING SURFACES SHALL COMPLY WITH SECTION R305 OF THE PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) LATEST EDITION.
2. ALL CURB RAMP SHALL BE CONSTRUCTED TO CONFORM TO ALL APPLICABLE PROVISIONS OF THE PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) LATEST EDITION.
3. RAMP SLOPES SHALL NOT BE STEEPER THAN 8.33%. DIMENSIONS AND OR ARRANGEMENTS SHOWN SHALL BE MODIFIED AS NECESSARY TO MEET THIS REQUIREMENT.
4. LOCATION OF RAMP MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
5. ALL CROSS SLOPES SHALL NOT EXCEED 2%.

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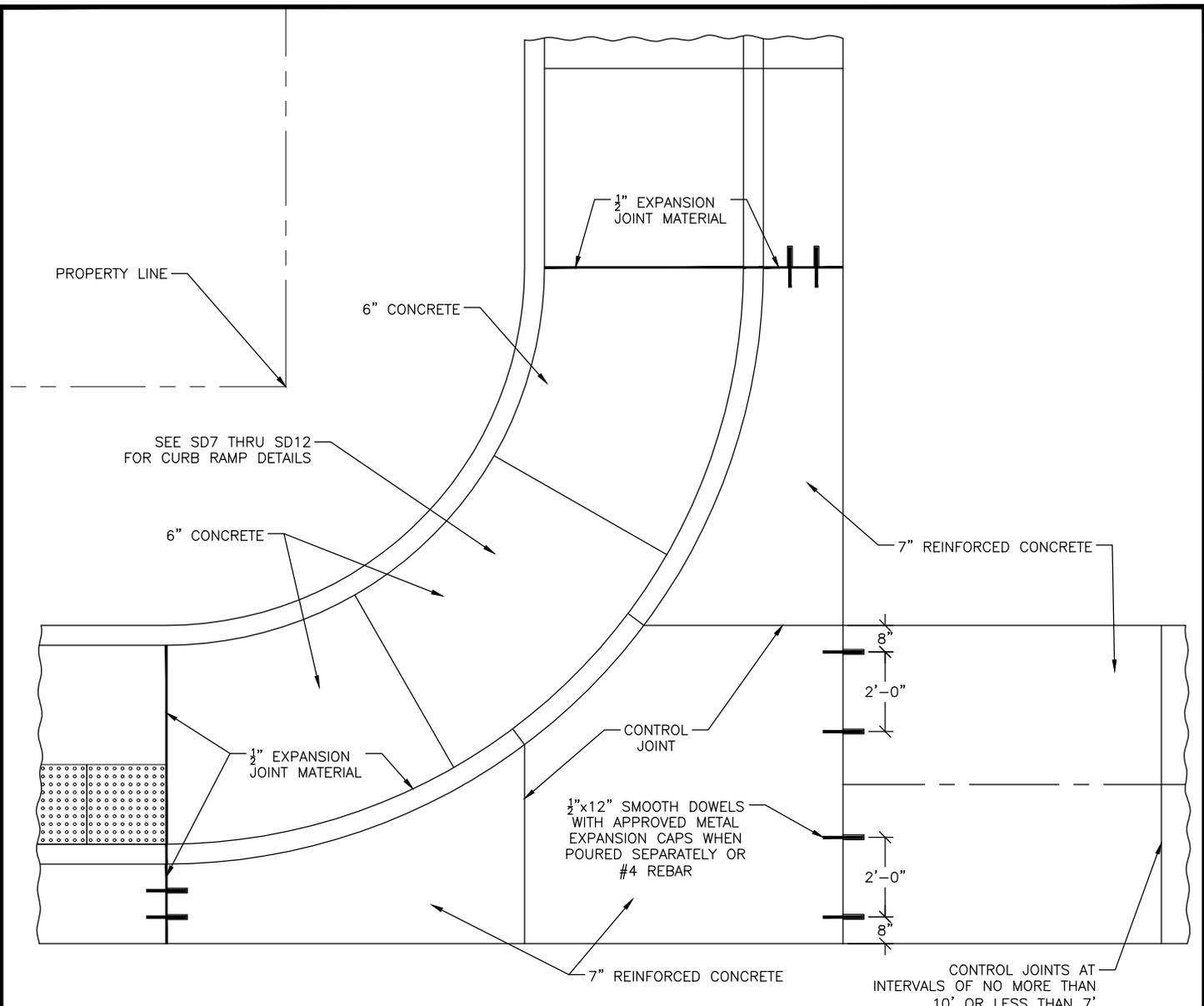


CURB RAMP DETAILS - CROSS SECTION

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

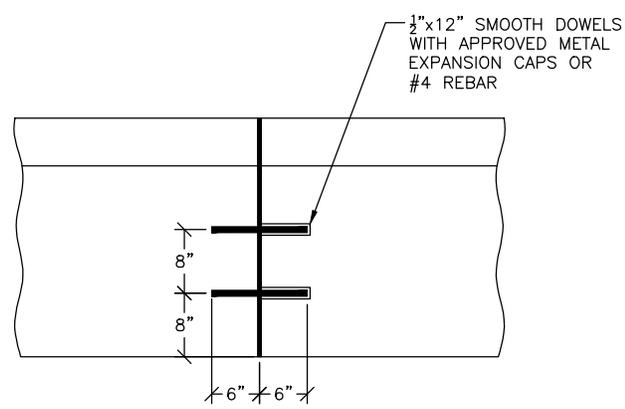
SD12

DRAWN BY: JM
CHECKED BY: BQ
APPROVED BY: CR



SQUARE PAN AND CROSS PAN

SCALE: 1"=2'-0"



DOWEL DETAIL

SCALE: 1"=2'-0"

09/03/2024
10/17/2022
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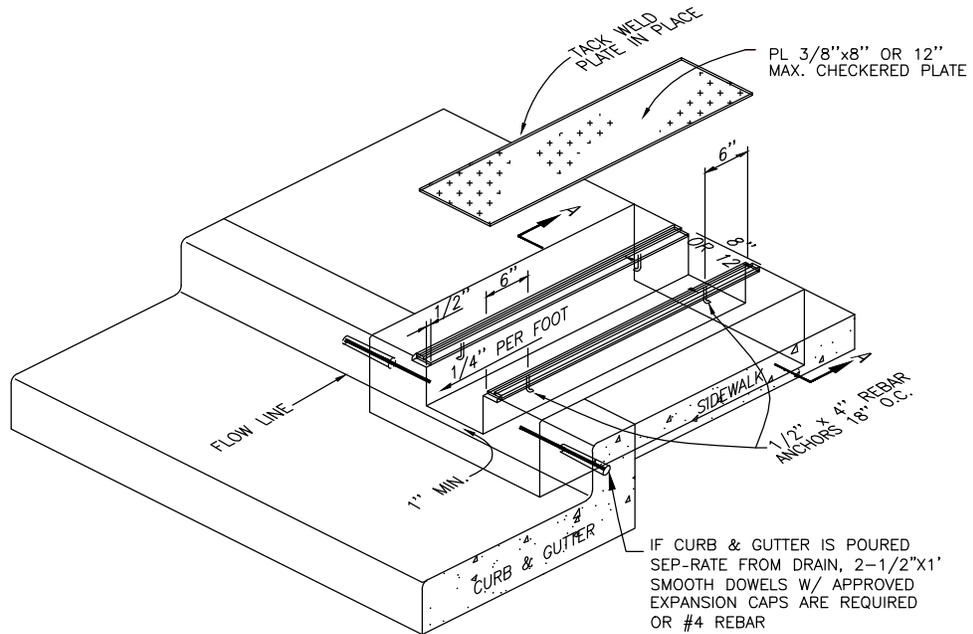


EXPANSION JOINT & DOWEL DETAILS

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

SD13

DRAWN BY: JM
CHECKED BY: BQ
APPROVED BY: CR



NOTES:

-LL STEEL SH-LL RECEIVE ONE CO-T RED OXIDE MET-L PRIMER -ND ONE FIELD CO-T BL-CK EN-MEL.

FOR INST-LL-TION OF - SIDEW-LK DR-IN WHERE THERE IS EXISTING CURB -ND GUTTER - FIVE (5') FOOT MINIMUM SECTION OF CURB -ND GUTTER MUST BE REMOVED.

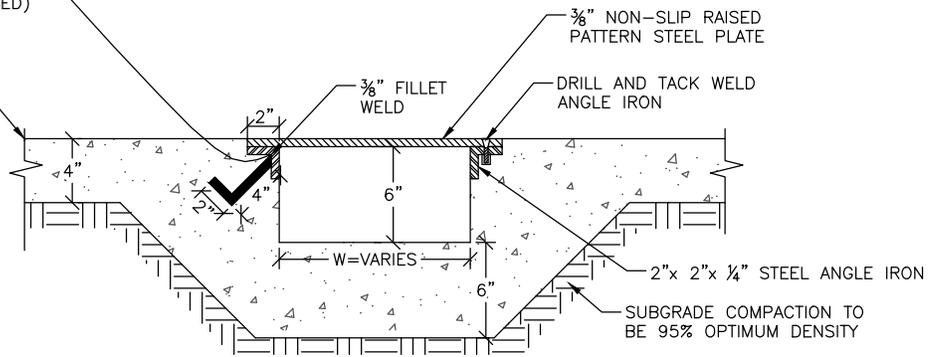
REMOV-L OF JUST THE CURB HE-D FOR INST-LL-TION OF - SIDEW-LK DR-IN WILL NOT BE -LLOWED

SIDEWALK DRAIN DETAIL

SCALE: 1"=2'-0"

#3 BAR WELD TO ANGLE IRON AT 18"O.C. EACH SIDE (1/2" ANCHOR BOLT MAY BE USED)

ADD EXPANSION JOINT AT FIRST STONE, EACH SIDE



SECTION A-A

SCALE: 1"=2'-0"

04/22/2025	REVISION
09/03/2024	
10/17/2022	

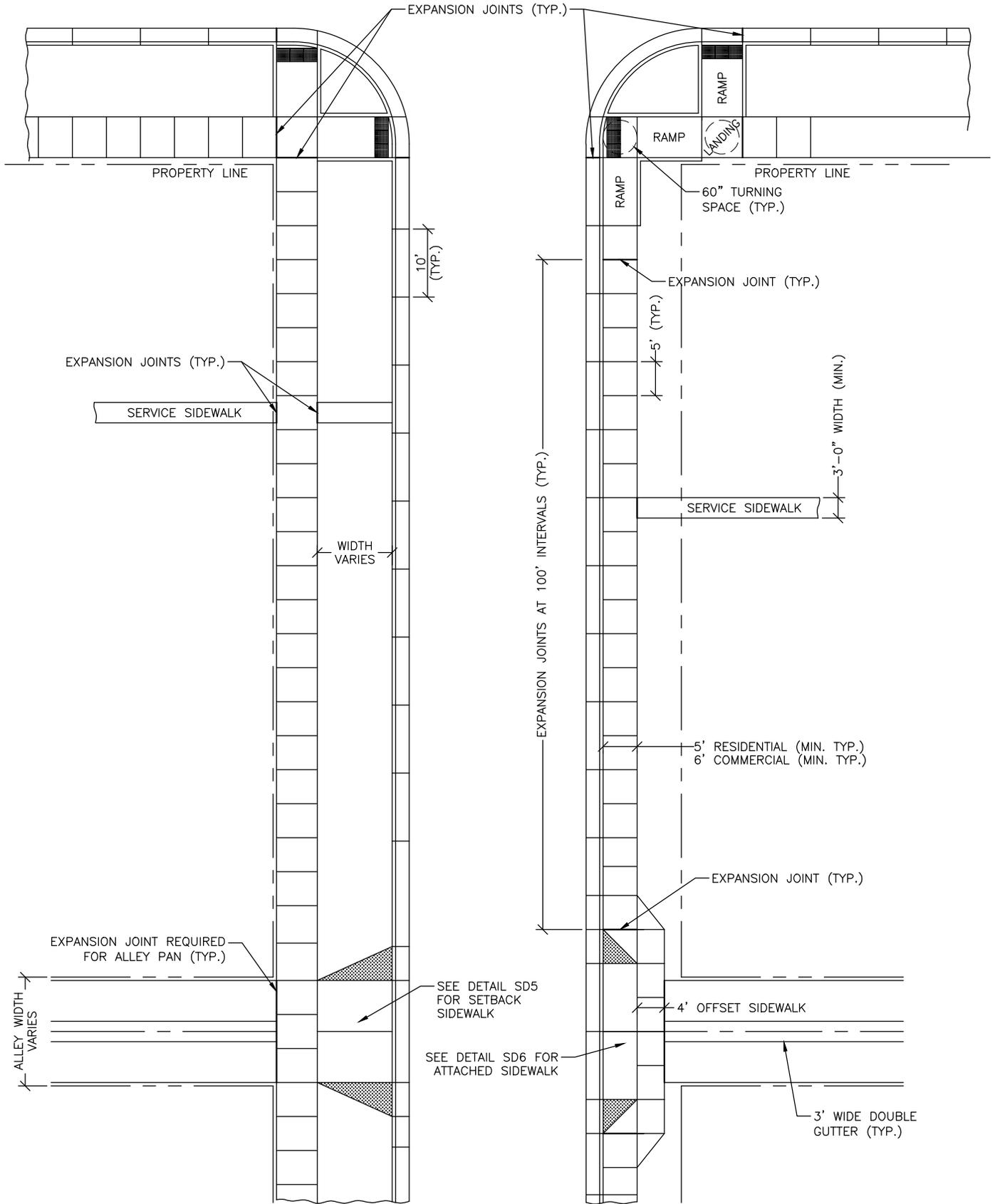


SIDEWALK DRAIN DETAIL

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

SD14

DRAWN BY: JM
CHECKED BY: BQ
APPROVED BY: CR



JOINT PLACEMENT AND WIDTH STANDARDS

SCALE: 1"=20'-0"

09/03/2024
01/01/2021
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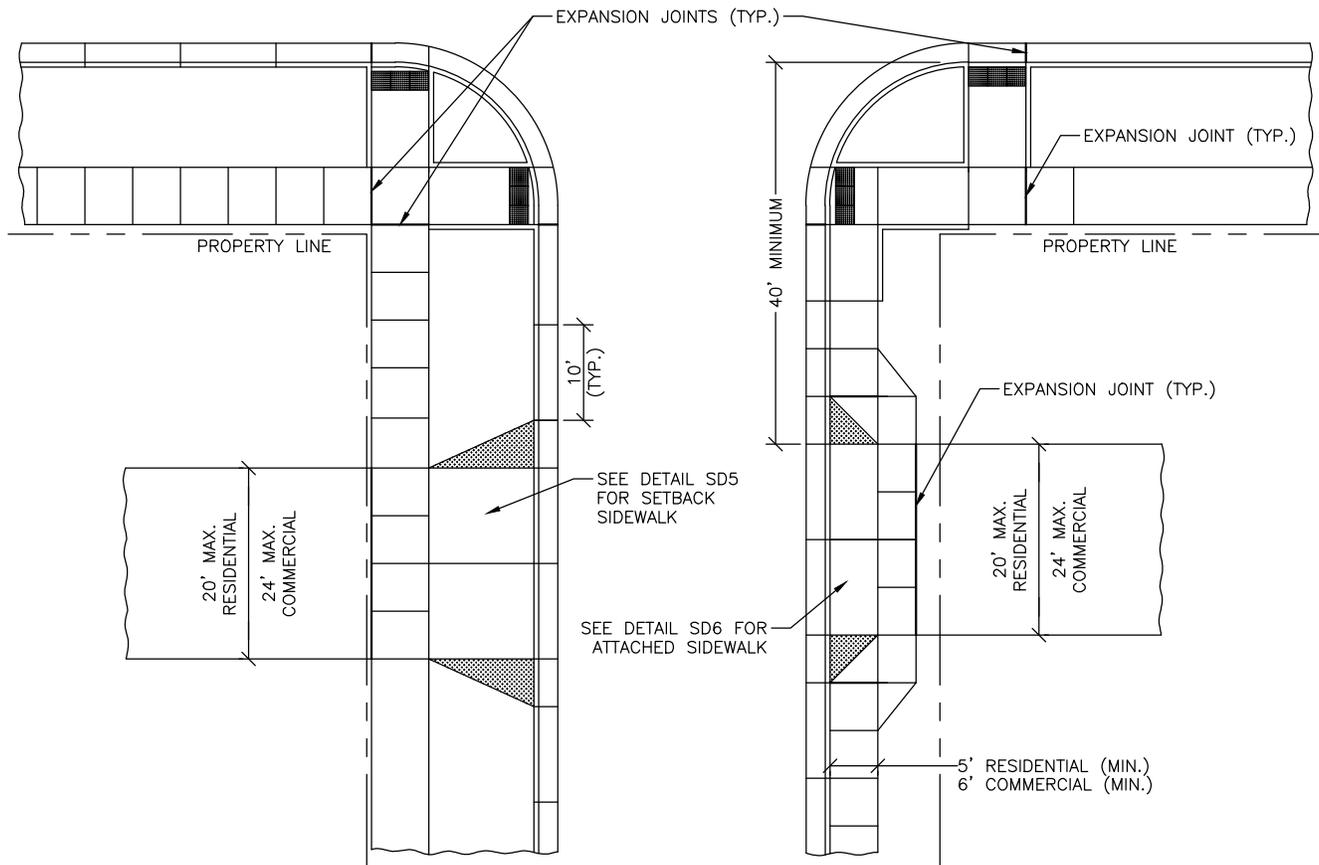


**JOINT PLACEMENT & WIDTH STANDARDS
FOR SIDEWALK, C&G AND ALLEYS**

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

SD16

DRAWN BY: JM
CHECKED BY: BQ
APPROVED BY: CR



GENERAL REQUIREMENTS FOR DRIVEWAYS

SCALE: 1"=20'-0"

NOTES:

1. PORTION OF ANY SIDEWALK AT DRIVEWAY CROSSINGS OR FUTURE DRIVEWAY CROSSINGS MUST HAVE A MINIMUM CONCRETE THICKNESS OF 6". THIS APPLIES TO ALL NEW CONSTRUCTION AND REPLACEMENT OF ANY SIDEWALK.
2. DRIVEWAY WIDTHS GREATER MAXIMUM WIDTHS SHOWN ABOVE REQUIRE APPROVAL FROM THE TRAFFIC ENGINEER.

09/03/2024
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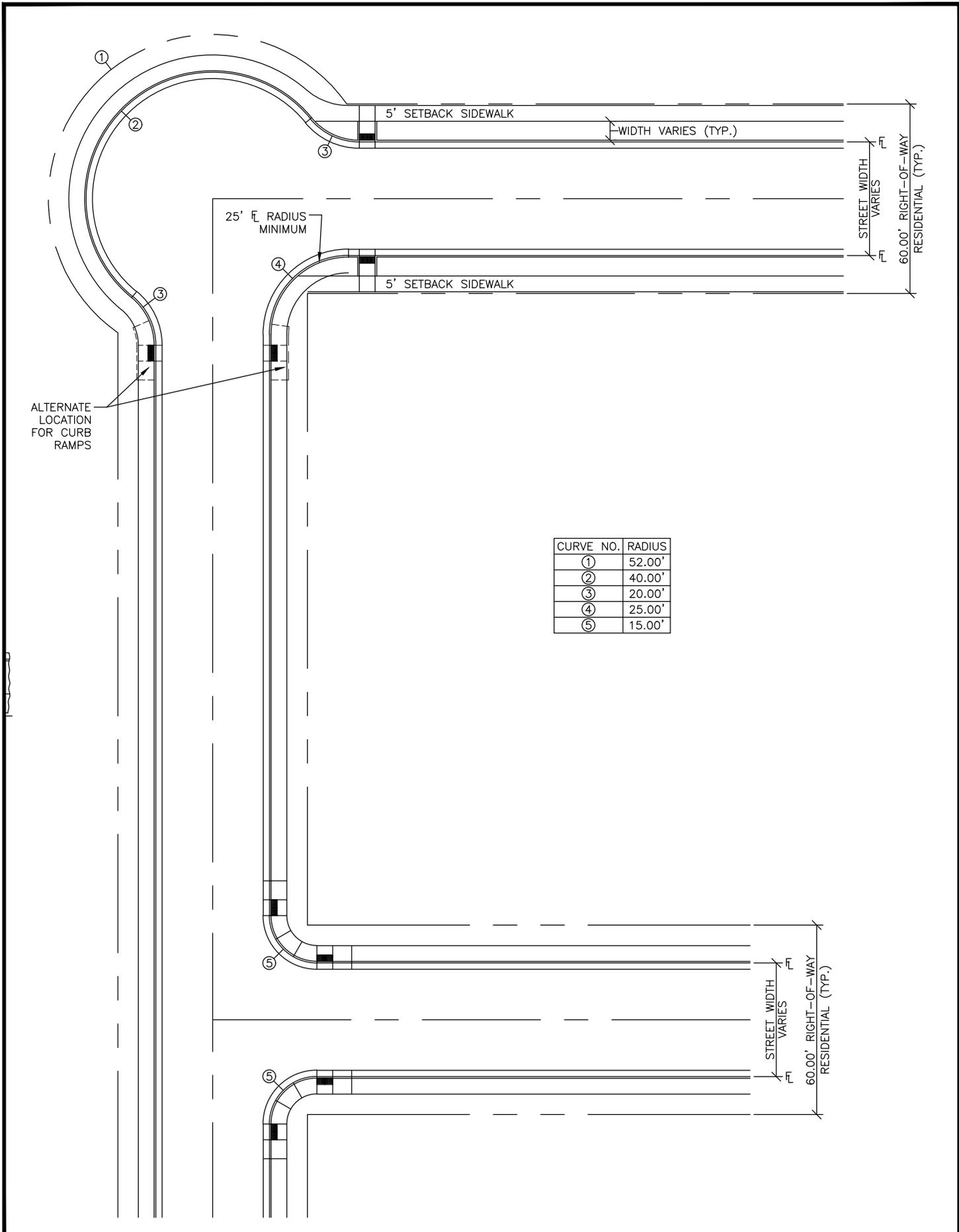


GENERAL REQUIREMENTS FOR DRIVEWAYS

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

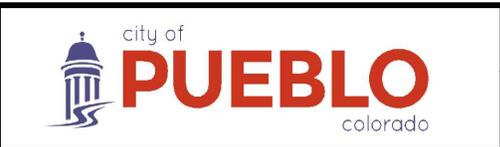
SD17

DRAWN BY: JM
CHECKED BY: BQ
APPROVED BY: CR



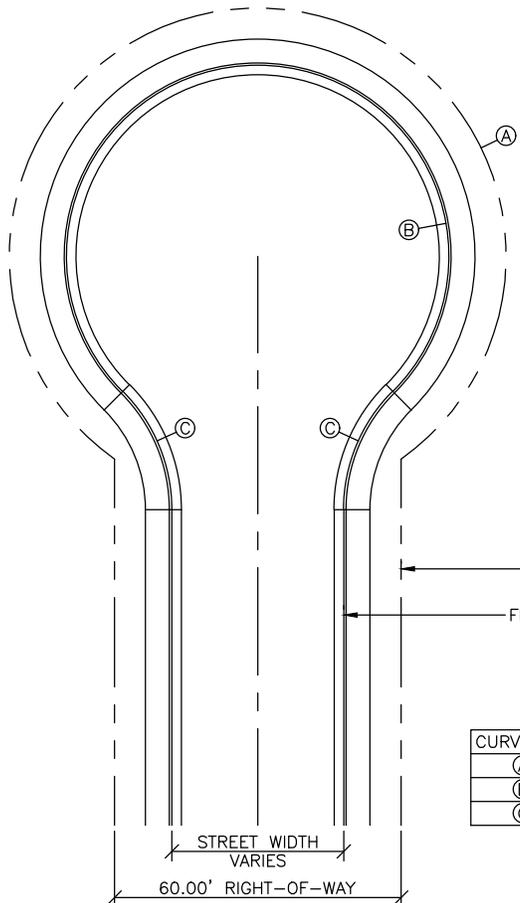
CURVE NO.	RADIUS
①	52.00'
②	40.00'
③	20.00'
④	25.00'
⑤	15.00'

09/03/2024
10/17/2022
REVISION

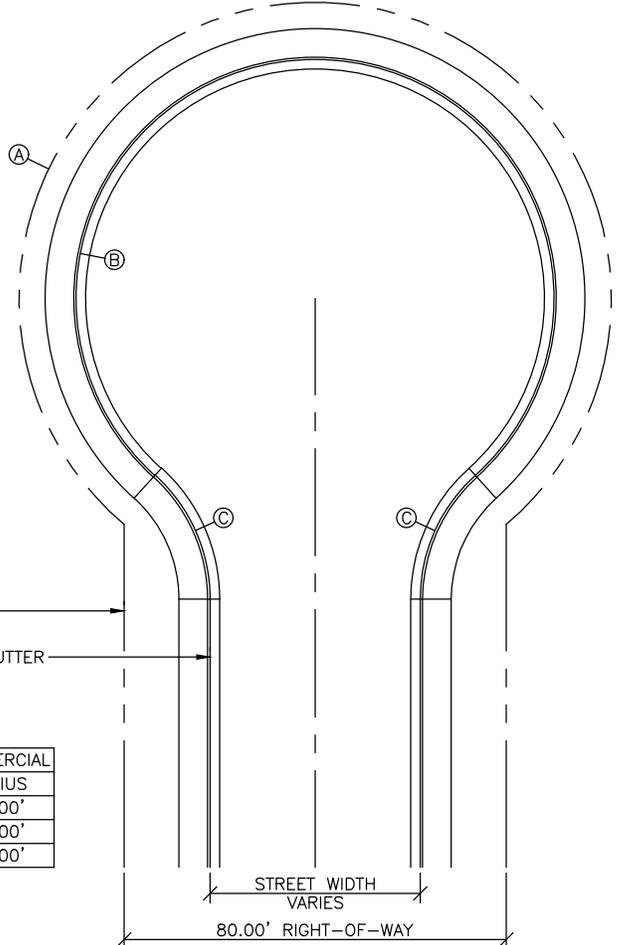


KNUCKLE AND "T" INTERSECTION DETAIL
 PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
 211 EAST "D" ST. PUEBLO, CO 81003
 (719) 553-2295 PHONE

SD18
 DRAWN BY: JM
 CHECKED BY: BQ
 APPROVED BY: CR

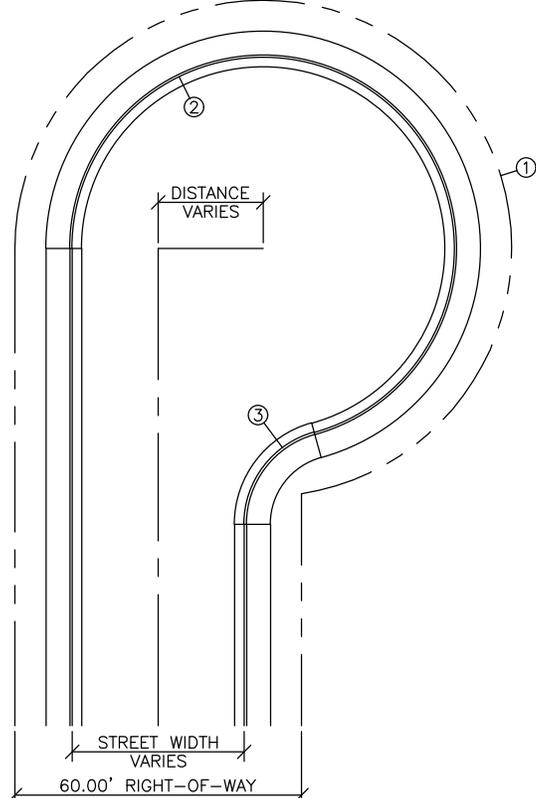


RESIDENTIAL



COMMERCIAL

CURVE NO.	RESIDENTIAL	COMMERCIAL
	RADIUS	RADIUS
Ⓐ	52.00'	62.00'
Ⓑ	40.00'	50.00'
Ⓒ	35.00'	35.00'



RESIDENTIAL

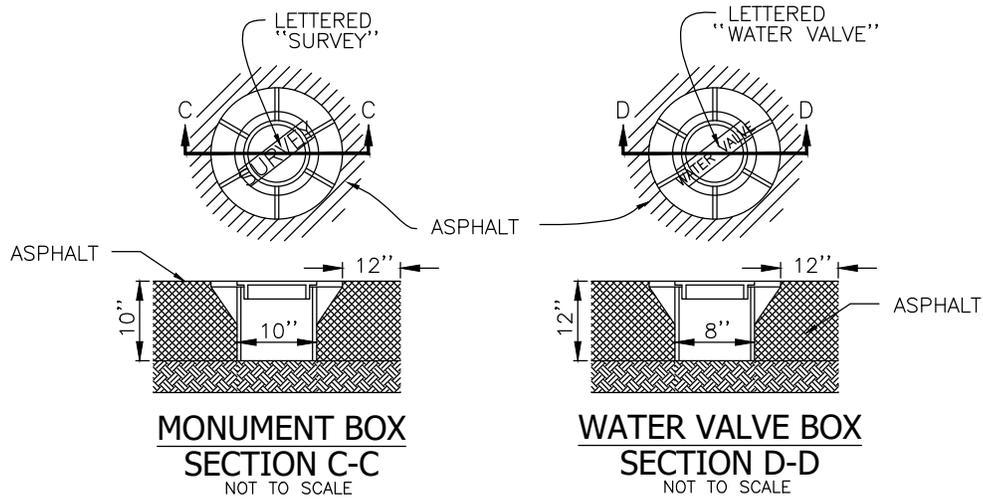
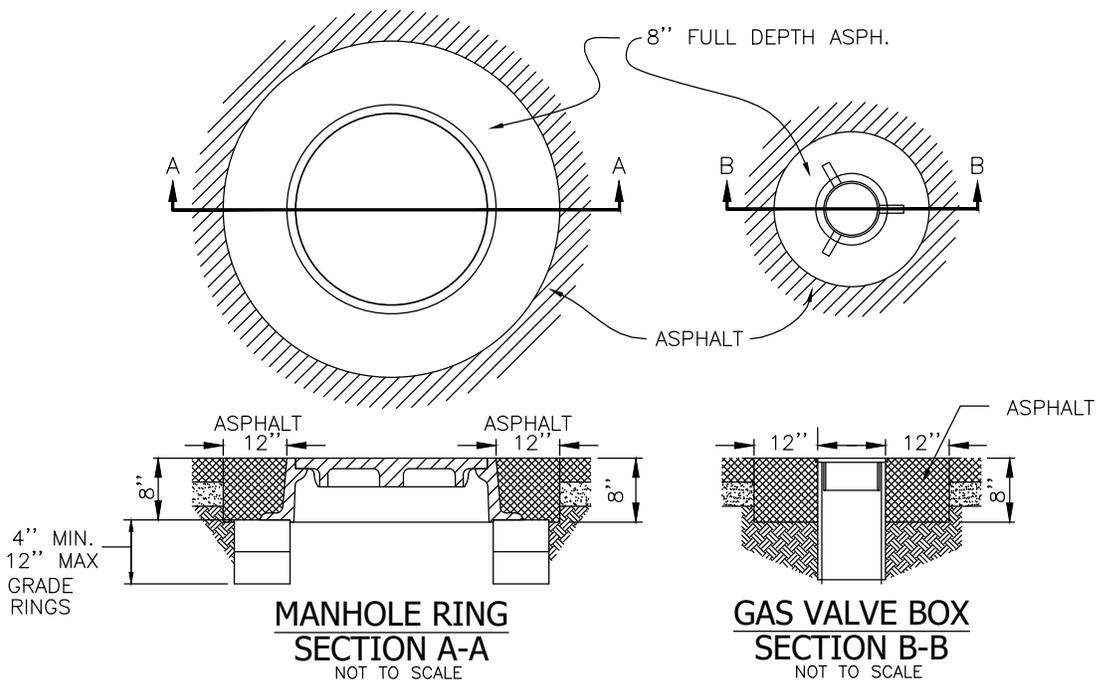
RESIDENTIAL	
CURVE NO.	RADIUS
①	52.00'
②	40.00'
③	20.00'

09/03/2024
10/17/2022
REVISION



CUL-DE-SAC DETAIL
 PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
 211 EAST "D" ST. PUEBLO, CO 81003
 (719) 553-2295 PHONE

SD19
 DRAWN BY: JM
 CHECKED BY: BQ
 APPROVED BY: CR



ADJUSTMENT DETAILS

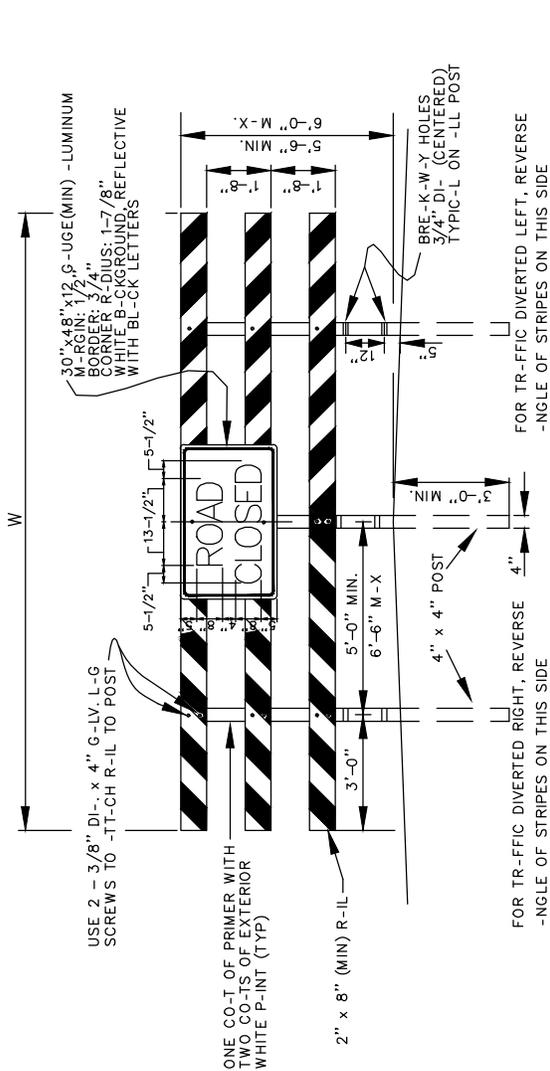
NOTES:
1. ALL RINGS TO BE SET 1/4" BELOW FINISH GRADE.

09/03/2024
10/17/2022
REVISION

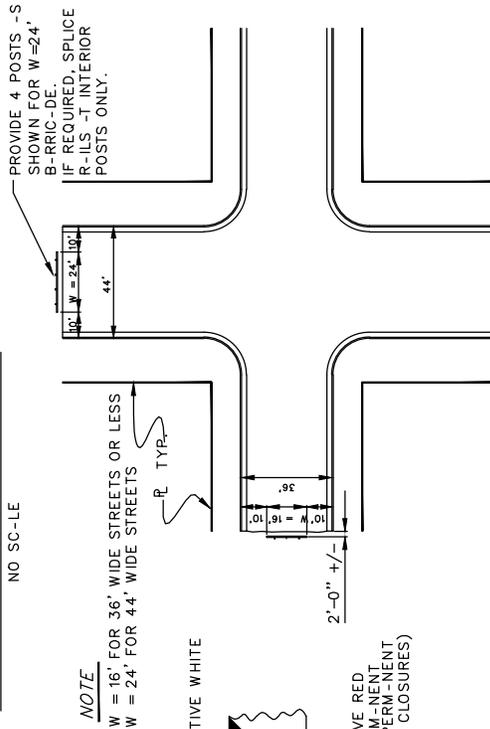


ADJUSTMENT DETAILS
PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

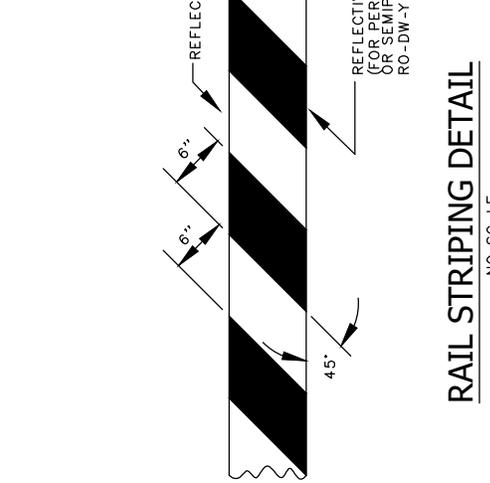
SD20
DRAWN BY: JM
CHECKED BY: BQ
APPROVED BY: CR



CONSTRUCTION DETAIL
NO SC-LE



LOCATION DETAIL
NO SC-LE



RAIL STRIPING DETAIL
NO SC-LE

GENERAL NOTES

1. FIELD LOCATION TO BE DETERMINED BY TRAFFIC ENGINEER.
2. ALL REFLECTIVE SURFACES SHALL BE SMOOTH SURFACE TYPE REFLECTIVE SHEETING OR APPROVED EQUAL.
3. ALL TIMBER SHALL BE GRADE NO. 2 OR BETTER, (DOUGLAS FIR, LARCH OR HEM-FIR.)
4. ALL POSTS SHALL BE PRESERVATIVE TREATED IN ACCORDANCE WITH AWPB-FDN STANDARDS.
5. ATTACH "ROAD CLOSED" SIGN TO POST WITH 2-3/8" DIA. x 4" GALV. LAG SCREWS. WHERE W = 24', PLACE SIGN ON POST LOCATED ON RIGHT SIDE OF BARRICADE CENTER.
6. PAINT FOR RAILS AND POSTS SHALL BE SHERWIN WILLIAMS A-100 ALKYD EXTERIOR WOOD PRIMER A-100 ALKYD EXTERIOR WOOD PRIMER WITH A-100 LATEX HOUSE AND TRIM PAINT (SERIES A8) OR APPROVED EQUAL.

09/03/2024
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REVISION

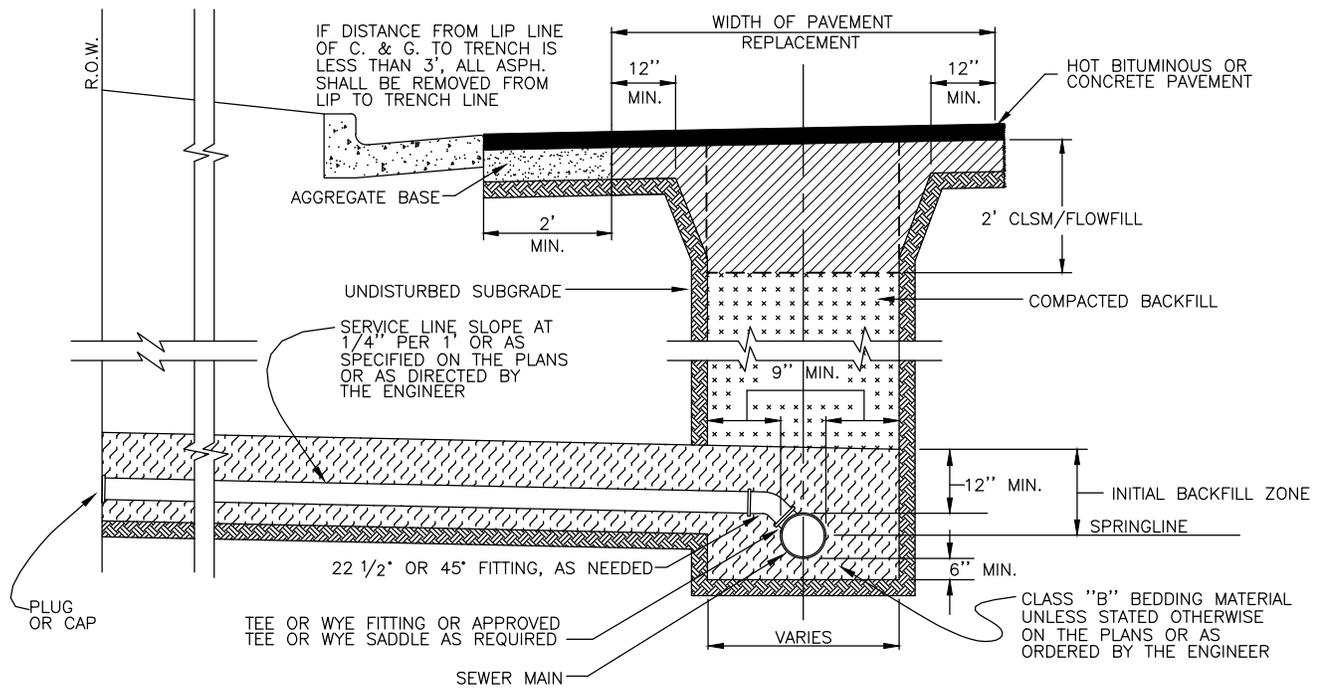


STANDARD TYPE III BARRICADE

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

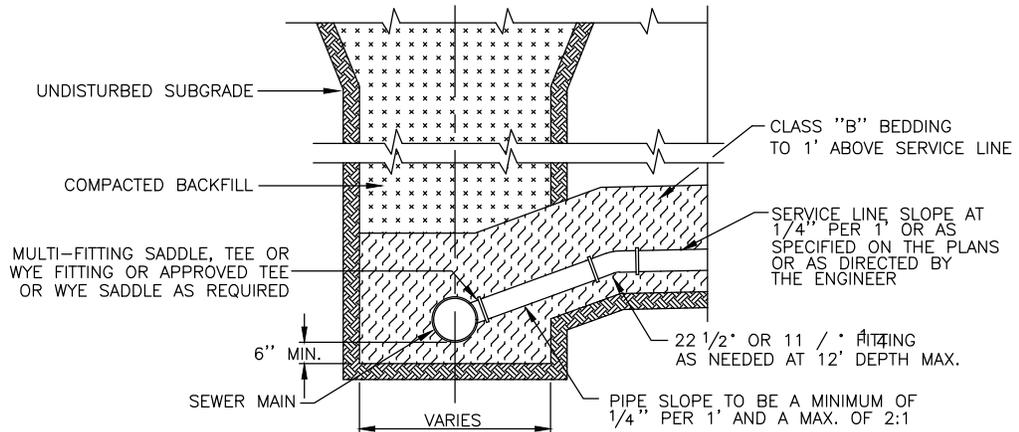
SD21

DRAWN BY: JM
CHECKED BY: BQ
APPROVED BY: CR



TRENCH DETAIL FOR SANITARY SEWER MAIN AND SERVICE LINES

SCALE: 1"=3'-0"



SANITARY SEWER SERVICE INSTALLATION FOR MAINS GREATER THAN 12 FEET DEEP

SCALE: 1"=3'-0"

NOTES:

1. CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE AND FEDERAL HEALTH AND SAFETY REQUIREMENTS INCLUDING BUT NOT LIMITED TO DEPOSITION OF CUT, SLOPING AND/OR BRACING.
2. SERVICE LINES SHALL BE CONNECTED TO THE SEWER MAIN SO THE FLOWLINE IS AT/OR ABOVE THE SPRINGLINE OF THE PIPE FOR 8" AND 10" SEWER MAINS AND IN THE TOP 1/4 OF THE PIPE FOR 12" AND LARGER SEWER MAINS.
3. THE ENDS OF ALL SERVICE LINES SHALL BE MARKED FOR LOCATION WITH A 2"x4" BOARD OR OTHER SUITABLE MARKER EXTENDING 2 FEET ABOVE AND 3 FEET BELOW GRADE IN ADDITION TO A 3 INCH WIDE GREEN PLASTIC TAPE TIED TO THE END OF THE SERVICE LINE AND EXTENDING 6 INCHES ABOVE THE GROUND SURFACE.

09/03/2024
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10/17/2022
REVISION

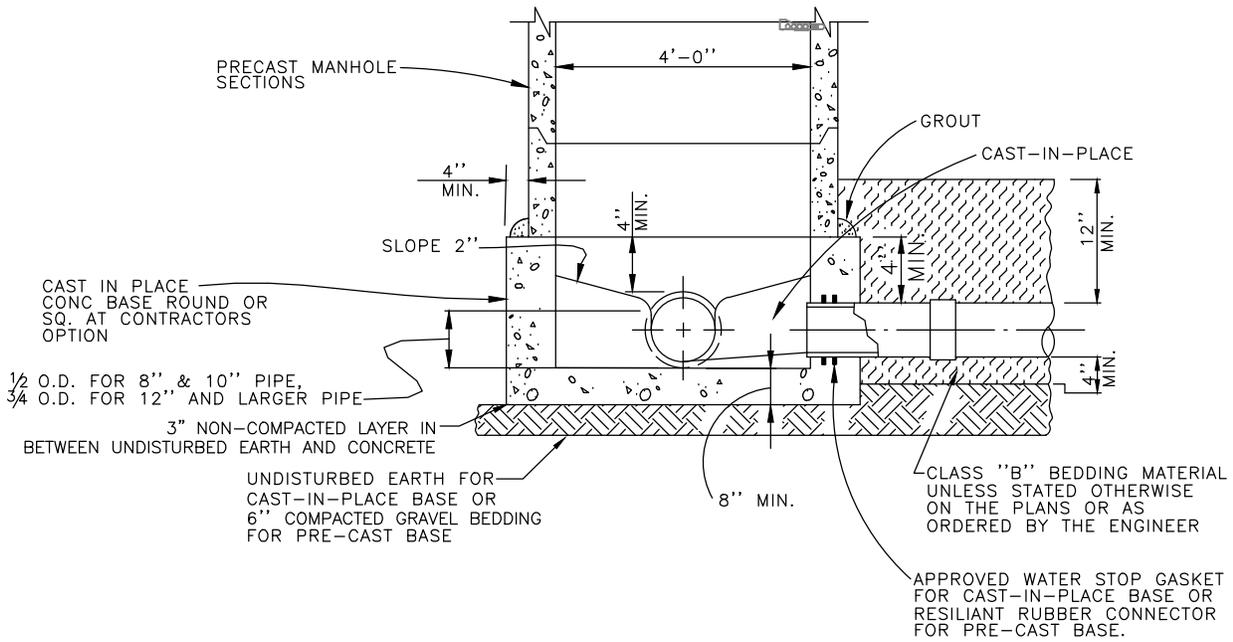


SANITARY SEWER TRENCH DETAIL

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
 211 EAST "D" ST. PUEBLO, CO 81003
 (719) 553-2295 PHONE

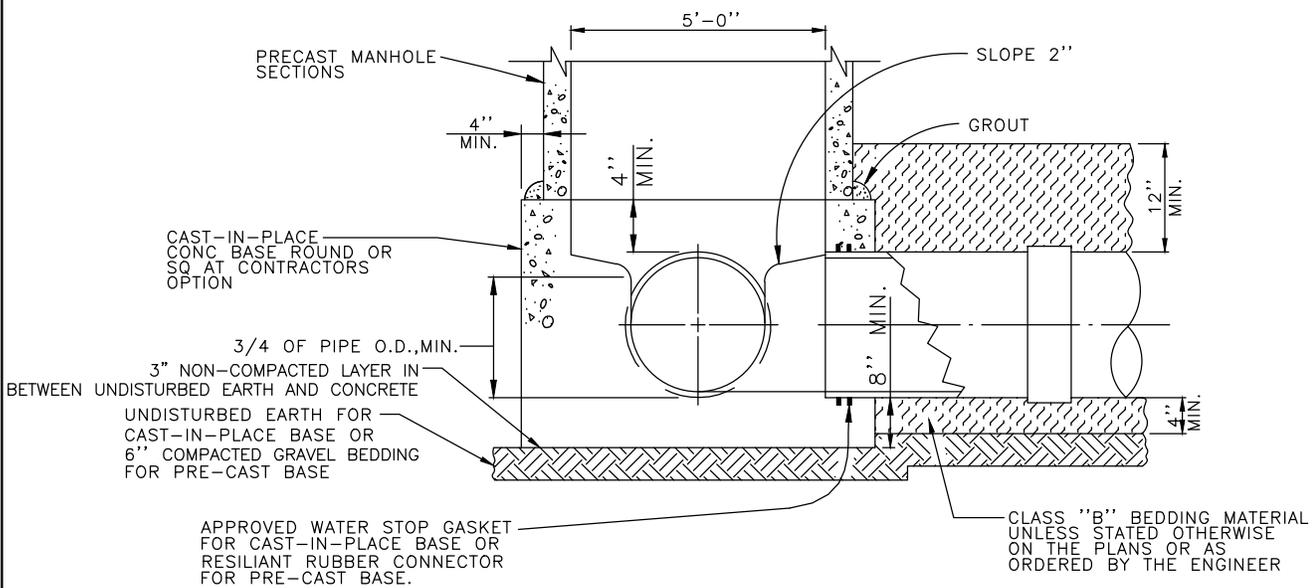
SD22

DRAWN BY: JM
 CHECKED BY: SM
 APPROVED BY: SM



STANDARD 48" BASE SECTION 8" THRU 15" PIPE

NO SCALE

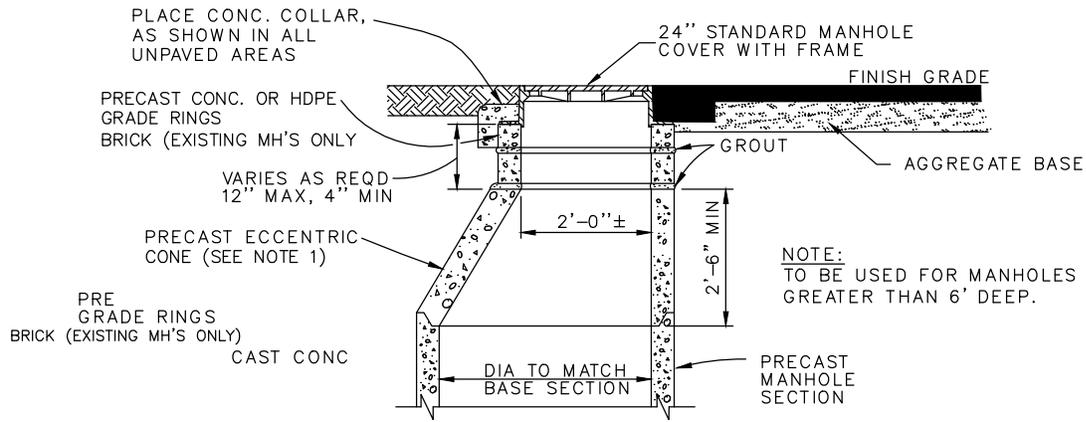


STANDARD 60" BASE SECTION 18" THRU 36" PIPE

NO SCALE

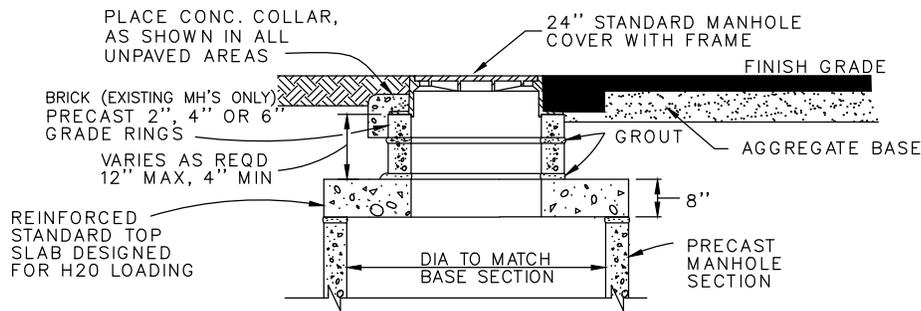
MANHOLE NOTES

1. USE 24" STANDARD MANHOLE FRAME AND COVER UNLESS OTHERWISE NOTED ON PLANS.
2. IF PRE-CAST MANHOLE BASES ARE USED, THE CONCRETE BENCH/CHANNEL SHALL BE CAST-IN-PLACE, AFTER SEWER PIPE IS SET TO GRADE
3. THE CONCRETE CHANNEL IN ALL MANHOLE BASES SHALL BE CAST WITH A MINIMUM 18" CENTERLINE RADIUS SWEEP.
4. FOR 72" STANDARD BASE SECTION 42" THRU 48" SEE SD15.
5. MANHOLES FOR PIPES GREATER THAN 48" SHALL BE DESIGNED BY ENGINEER.



MANHOLE TOP SECTION WITH RING EXTENSION

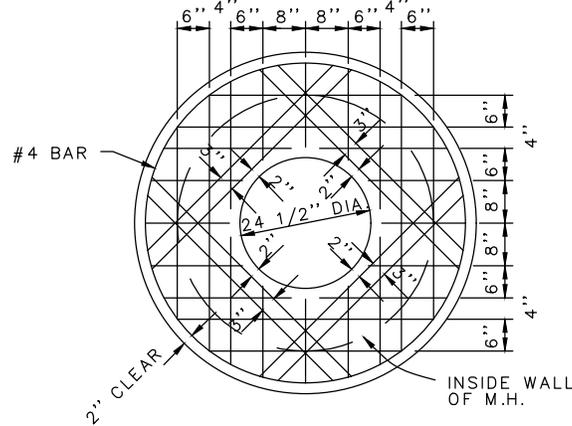
SCALE: 1"=3'-0"



FLAT TOP MANHOLE

SCALE: 1"=3'-0"

TO BE USED FOR MANHOLES 6' DEEP OR LESS

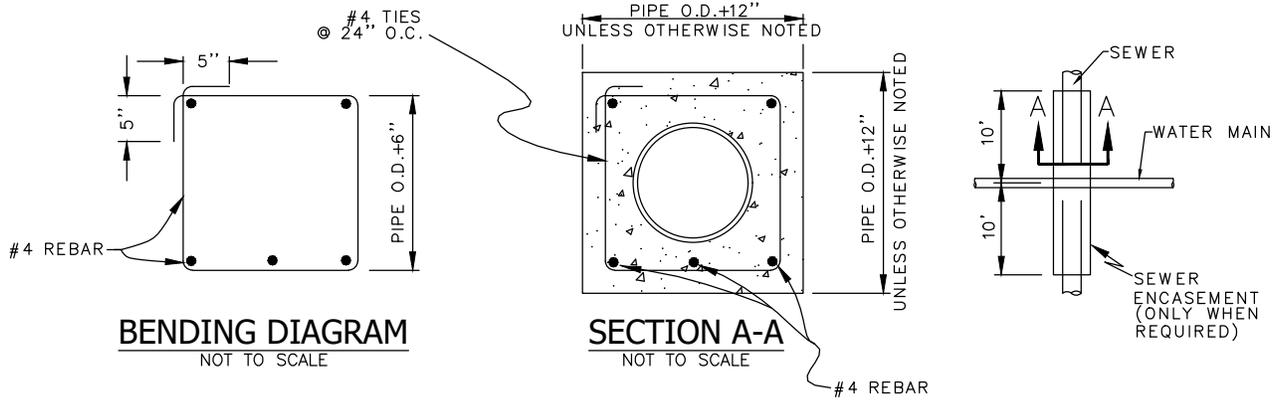


1. DESIGNED FOR H2O LOADING
2. BARS TO BE TIED, NOT WELDED.
3. SLAB TO BE 8" THICK.
4. STEEL TO BE PLACED TOP & BOTTOM WITH 2" CLEAR BTWN. BARS & CONC. SURFACE.
5. ALL BARS TO BE #4.

TOP CONCRETE SLAB FOR FLAT TOP MANHOLE

NOT TO SCALE

NOTE 1. "SITUATE ECCENTRIC CONE SECTION WHERE SLOPE OF THE CONE SECTION IS POINTING TOWARD THE DOWNSTREAM DIRECTION"



SEWER ENCASEMENT DETAILS
NOT TO SCALE

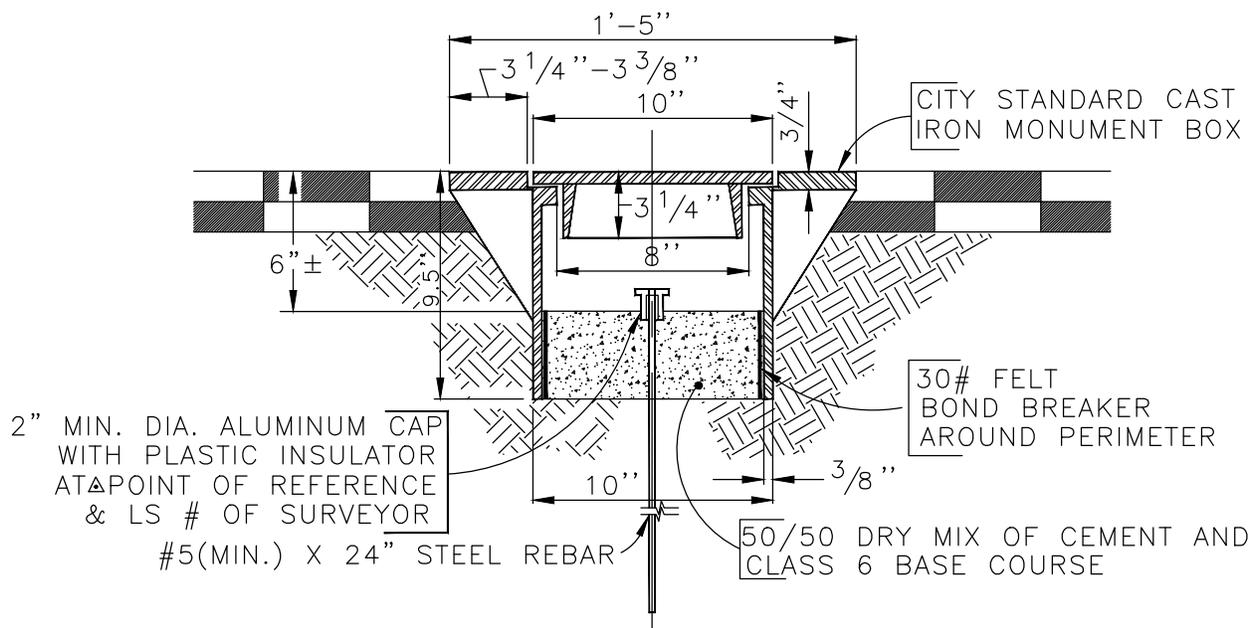
09/03/2024
2/13/2023
10/17/2022
REVISION



**SANITARY SEWER ENCASEMENT
DETAILS**
PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

SD27

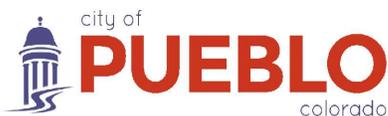
DRAWN BY: JM
CHECKED BY: SM
APPROVED BY: SM



RIGHT-OF-WAY MONUMENTATION STANDARD

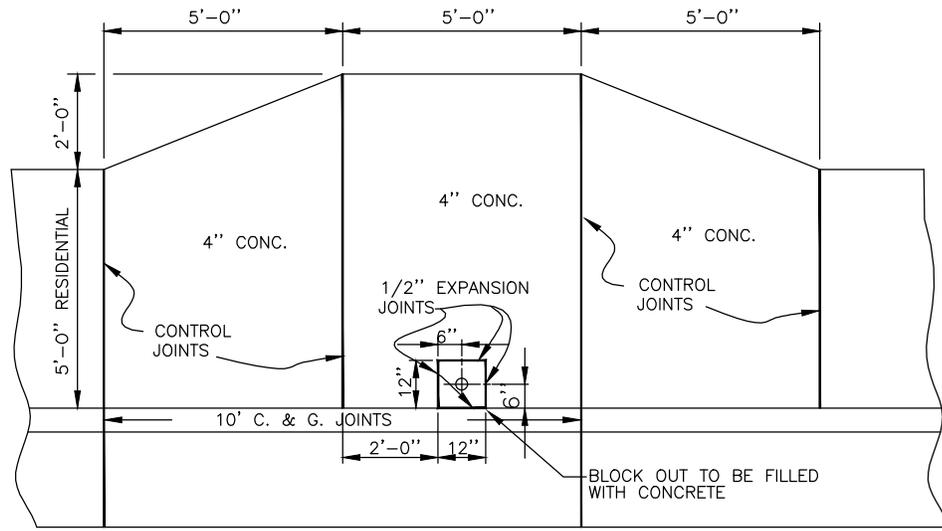
NOT TO SCALE

10/17/2022
REVISION

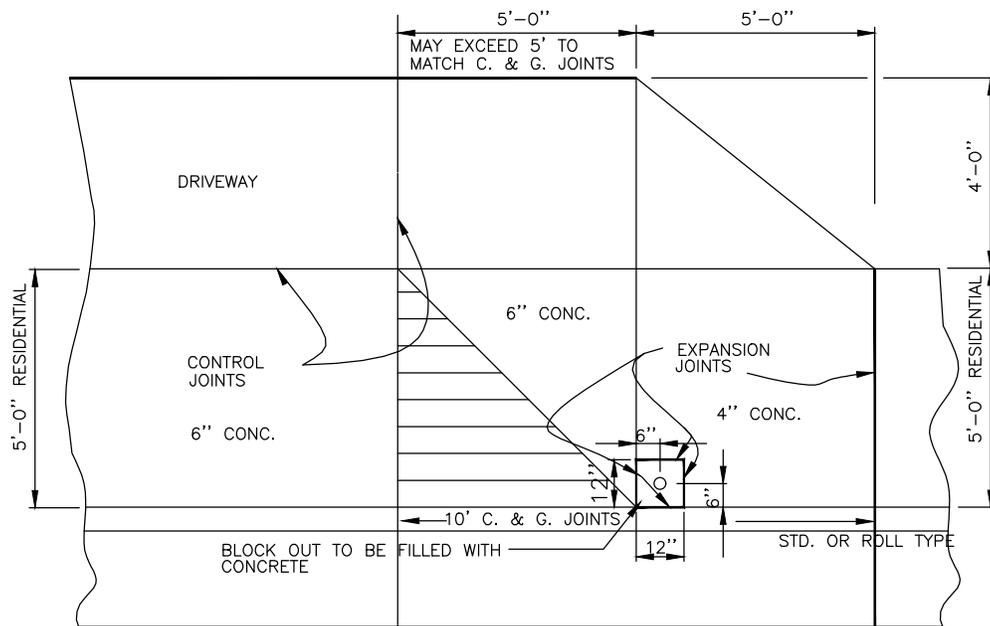


RIGHT-OF-WAY MONUMENTATION STANDARD
 PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
 211 EAST "D" ST. PUEBLO, CO 81003
 (719) 553-2295 PHONE

SD28
 DRAWN BY: JM
 CHECKED BY: BQ
 APPROVED BY: CR



SCALE: 1" = 4'



SCALE: 1" = 4'

NOTE:
 FOR MAIL BOXES LARGER THAN DIMENSIONS SHOWN,
 DETAIL SHALL BE MODIFIED TO PROVIDE A MINIMUM
 3'-6" CLEARANCE TO EDGE OF WALK

10/17/2022
REVISION

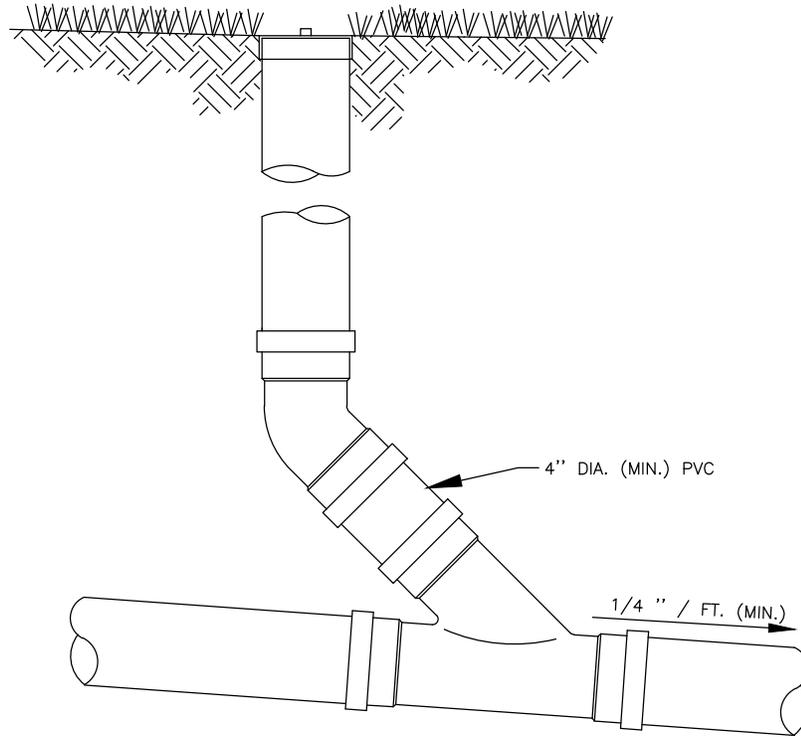


CURB SIDE MAIL BOXES

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
 211 EAST "D" ST. PUEBLO, CO 81003
 (719) 553-2295 PHONE

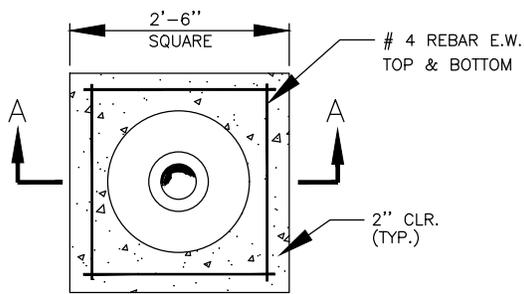
SD29

DRAWN BY: JM
 CHECKED BY: BQ
 APPROVED BY: CR



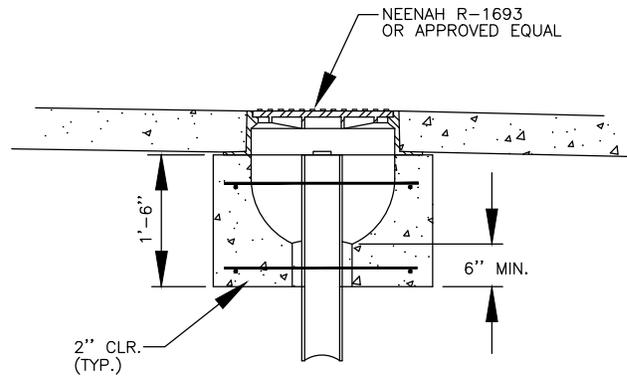
TYPICAL CLEANOUT DETAIL

NOT TO SCALE



COVER DETAIL

NOT TO SCALE



SECTION A-A

NOT TO SCALE

NOTE:

WHEN CLEANOUT IS IN STREET, PARKING OR ANY DRIVEWAY, CONSTRUCT COVER AS SHOWN

10/17/2022
REVISION



SANITARY SEWER MAIN CLEANOUT

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
 211 EAST "D" ST. PUEBLO, CO 81003
 (719) 553-2295 PHONE

SD30

DRAWN BY: JM
 CHECKED BY: BQ
 APPROVED BY: CR

Materials

General

The work covered by this section of the specifications consists of the furnishing of all labor, supplies, equipment and materials and performing all operations in connection with the installation of tracer wire and appurtenances, as shown on the plans, as herein specified and directed by the Engineer to comply with Senate Bill 18-167. The bill requires that all new underground facilities, including laterals up to the structure or building being served, installed on or after August 8, 2018, must be electronically locatable when installed per section 9-1.5-103(10), C.R.S.

All tracer wire and tracer wire products shall be domestically manufactured in the U.S.A.

All tracer wire shall have HDPE insulation intended for direct bury, color coated per APWA standard for the specific utility being marked.

Tracer Wire

- **Open Trench** - Tracer wire shall be #12 AWG copper clad steel, high strength with minimum 450 lb. break load, with minimum 30 mil HDPE insulation thickness.
- **Directional Drilling/Boring** - Tracer wire shall be #12 AWG copper clad steel, extra high strength with minimum 1,150 lb. break load, with minimum 30 mil HDPE insulation thickness.
- **Tracer wire - Pipe Bursting/Slip Lining** - Tracer wire shall be 7 x 7 stranded copper clad steel, extreme strength with 4,700 lb. break load, with minimum 50 ml HDPE insulation thickness.

Connectors

- All mainline tracer wires must be interconnected in intersections, at mainline tees and mainline crosses. At tees, the three wires shall be joined using a single 3-way lockable connector (SnakeBite™ or approved equal). At crosses, the four wires shall be joined using a 4-way connector. Use of two 3-way connectors with a short jumper wire between them is an acceptable alternative.
- **Direct bury wire connectors** - Shall include SnakeBite™ 3-way lockable connectors (or approved equal) and mainline to lateral lug connectors specifically manufactured for use in underground tracer wire installation. Connectors shall be dielectric silicon filled to seal out moisture and corrosion and shall be installed in a manner so as to prevent any uninsulated wire exposure.
- Non-locking friction fit, twist on or taped connectors are prohibited.

Termination/Access

- All tracer wire termination points must utilize an approved tracer wire access box (above ground access box or grade level/in-ground access box as applicable), specifically manufactured for this purpose.
- All grade level/in-ground access boxes shall include a dual terminal switchable lid (SnakePit® LD14G2T-SW or approved equal), be appropriately identified with "sewer" cast into the cap, and color coded per APWA standard for the specific utility being marked.
- A minimum of 2 ft. of excess/slack wire is required in all tracer wire access boxes after meeting final elevation.
- All tracer wire access boxes must include a manually interruptible conductive/connective link between the terminal(s) for the tracer wire connection and the terminal for the ground rod wire connection.
- Ground wire shall be connected to the identified (or bottom) terminal on all access boxes.
- **Service Laterals on public property** - Tracer wire must terminate with a coil of 6 feet of tracer wire for future extension to the building, located at the edge of the road right-of-way, and out of the roadway.
- **Service Laterals on private property** - Tracer wire must terminate at an approved above-ground tracer wire access box, affixed to the building exterior directly above where the utility enters the building, at an elevation not greater than 5 vertical feet above finished grade, or terminate at an approved grade level/in-ground tracer wire access box, located within 2 linear feet of the building being served by the utility.
- **Long-runs, in excess of 2,500 linear feet** - Tracer wire access must be provided utilizing an approved grade level/in-ground tracer wire access box, located at the edge of the road right-of-way and out of the roadway. The grade level/in-ground tracer wire access box shall be delineated using a minimum 48" polyethylene marker post, color coded per APWA standard for the specific utility being marked or other approved marker by the City of Pueblo.

Grounding

- Tracer wire must be properly grounded at all dead ends/stubs.
- Grounding of tracer wire shall be achieved by use of a drive-in magnesium ground rod with a minimum of 20ft of #12 red HDPE insulated copper clad steel wire connected to anode (minimum 1.5 lb.) specifically manufactured for this purpose and buried at the same elevation as the utility.
- When grounding the tracer wire at dead ends/stubs, the ground rod shall be installed in a direction 180 degrees opposite of the tracer wire, at the maximum possible distance.
- When grounding the tracer wire in areas where the tracer wire is continuous and neither the mainline tracer wire or the ground rod wire will be terminated at/above grade, install ground rod wire directly beneath and in-line with the tracer wire. Do not coil excess wire from ground rod wire. In this installation method, the ground rod wire shall be trimmed to an appropriate length before connecting to tracer wire with a mainline to lateral lug connector.
- Where the ground rod wire will be connected to a tracer wire access box, a minimum of 2 ft. of excess/slack wire is required after meeting final elevation.

REVISION		TRACER WIRE SPECIFICATIONS	SD31
		(1 of 3)	DRAWN BY: JH
		PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION	CHECKED BY: SM
		211 EAST "D" ST. PUEBLO, CO 81003	APPROVED BY: JH
		(719) 553-2295 PHONE	

Installation

General

- Tracer wire installation shall be performed in such a manner that allows proper access for connection of line tracing equipment, proper locating of wire without loss or deterioration of low frequency (512Hz) signal for distances in excess of 1,000 linear feet, and without distortion of signal caused by multiple wires being installed in close proximity to one another.
- Tracer wire systems must be installed as a single continuous wire, except where using approved connectors. No looping or coiling of wire is allowed.
- Any damage occurring during installation of the tracer wire must be immediately repaired by removing the damaged wire and installing a new section of wire with approved connectors. Taping and/or spray coating shall not be allowed.
- Tracer wire shall be installed at the top of the pipe and secured (taped/tied) at 5' intervals.
- Tracer wire must be properly grounded as specified.
- Tracer wire on all service laterals/stubs must terminate at an approved tracer wire access box located directly above the utility, at the edge of the road right-of-way but out of the roadway. (See Tracer wire **Termination/Access**)
- At all mainline dead-ends, tracer wire shall go to ground using an approved connection to a drive-in magnesium ground rod, buried at the same depth as the tracer wire. (See **Grounding**)
- Mainline tracer wire shall not be connected to existing conductive pipes. Treat as a mainline dead-end and ground using an approved waterproof connection to a ground rod buried at the same depth as the tracer wire.
- All service lateral tracer wires shall be a single wire, connected to the mainline tracer wire using an approved mainline to lateral lug connector, installed without cutting/splicing the mainline tracer wire.
- In occurrences where an existing tracer wire is encountered on an existing utility that is being extended or tied into, the new tracer wire and existing tracer wire shall be connected using approved splice connectors and shall be properly grounded at the splice location as specified.

Storm & Sanitary Sewer Systems

- All service lateral tracer wires must be properly connected to the mainline tracer wire to ensure full tracing/locating capabilities from a single connection point.
- Lay mainline tracer wire continuously, by-passing around the outside of manholes/structures on the north or east side.
- Tracer wire on all sewer laterals must terminate at the property line with a coil of 6 feet of tracer wire taped directly to the service lateral at the edge of the road right-of-way or at an approved location.
- The City of Pueblo Stormwater Department or Wastewater Department must be contacted to inspect tracer wire installation prior to backfilling any infrastructure that connects to the City's storm sewer or sanitary sewer system.

Prohibited Products and Methods

The following products and methods shall not be allowed or acceptable:

- Uninsulated tracer wire
- Tracer wire insulations other than HDPE
- Tracer wires not domestically manufactured
- Non-locking, friction fit, twist on or taped connectors
- Brass or copper ground rods
- Wire connections utilizing taping or spray-on waterproofing
- Looped wire or continuous wire installations, that has multiple wires laid side-by-side or in close proximity to one another
- Tracer wire wrapped around the corresponding utility
- Brass fittings with tracer wire connection lugs
- Wire terminations within the roadway, i.e. in valve boxes, cleanouts, manholes, etc.
- Connecting tracer wire to any conductive utilities

Testing

- All new tracer wire installations shall be located using typical low frequency (512Hz) line tracing equipment, witnessed by the contractor, engineer and facility owner as applicable, prior to acceptance of ownership.
- This verification shall be performed upon completion of rough grading and again prior to final acceptance of the project.
- Continuity testing in lieu of actual line tracing shall not be accepted.

TRACER WIRE SPECIFICATIONS (2 of 3)

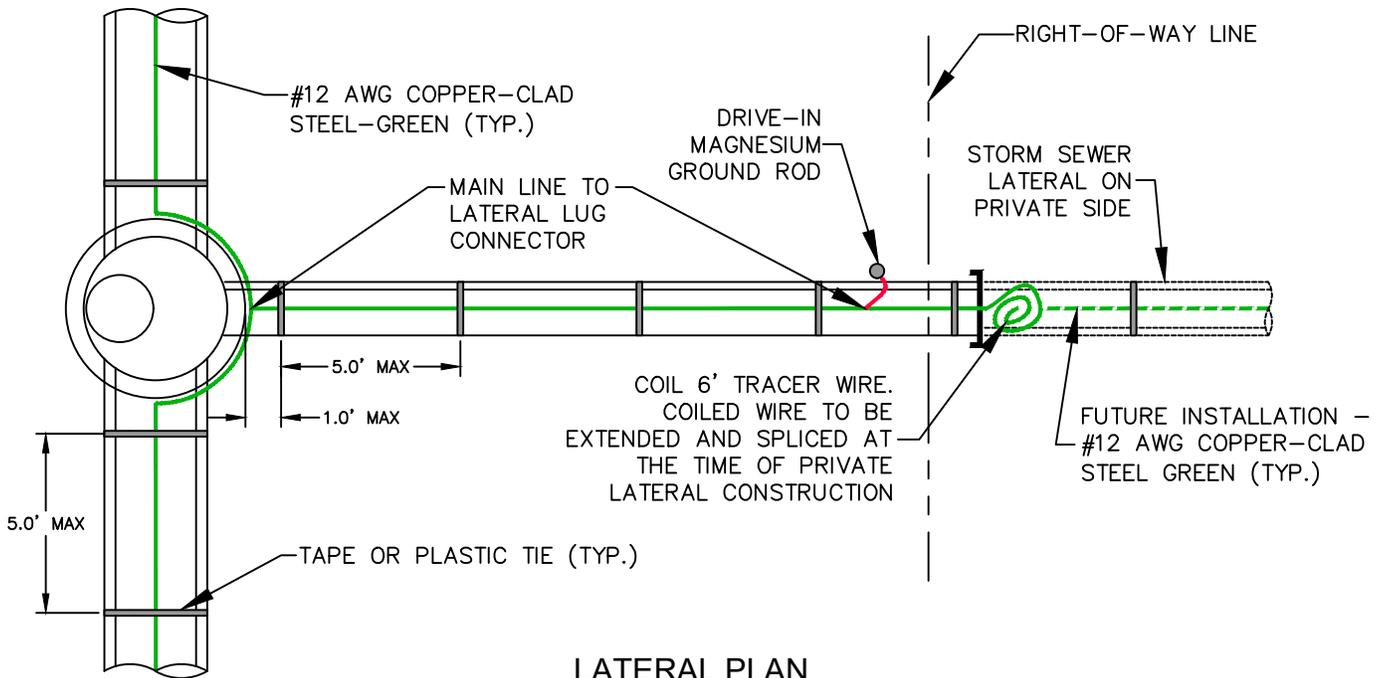
PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
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SD32

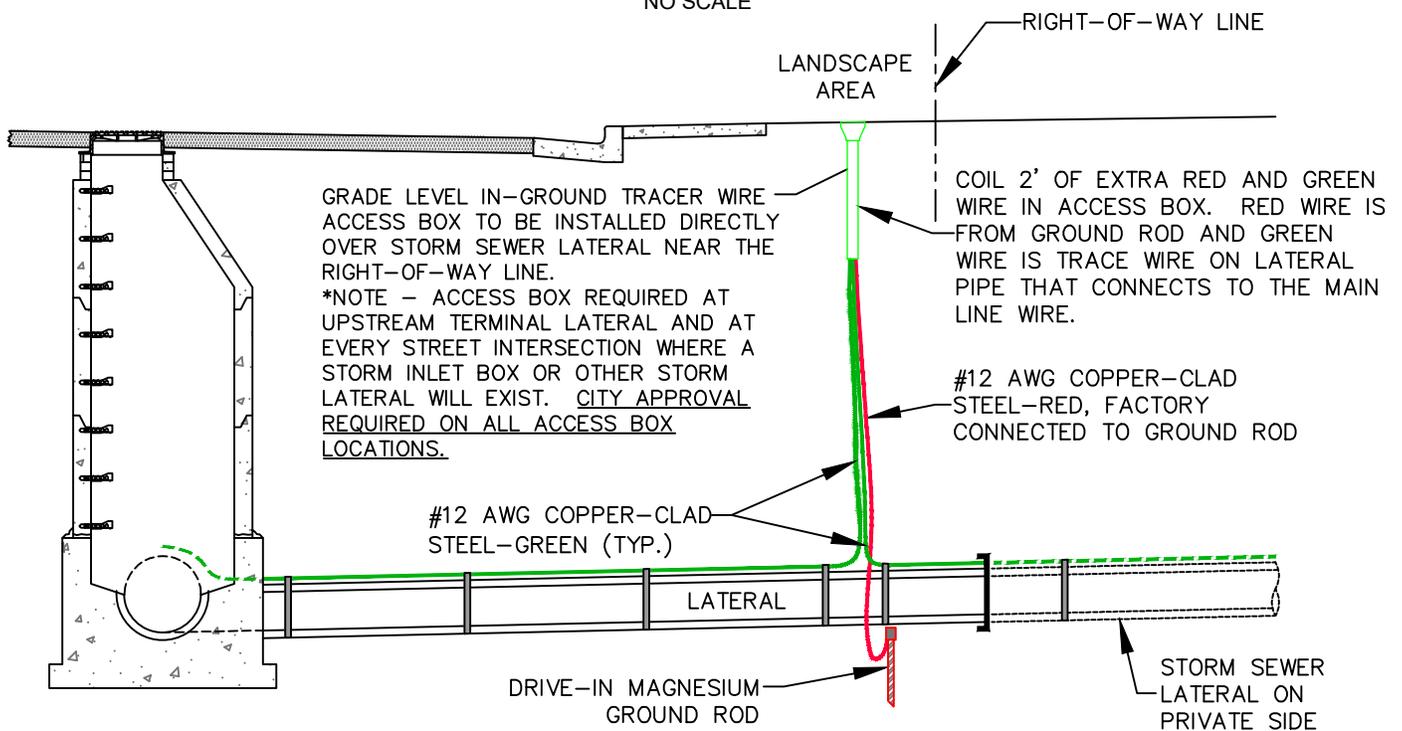
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CHECKED BY: SM
APPROVED BY: JH



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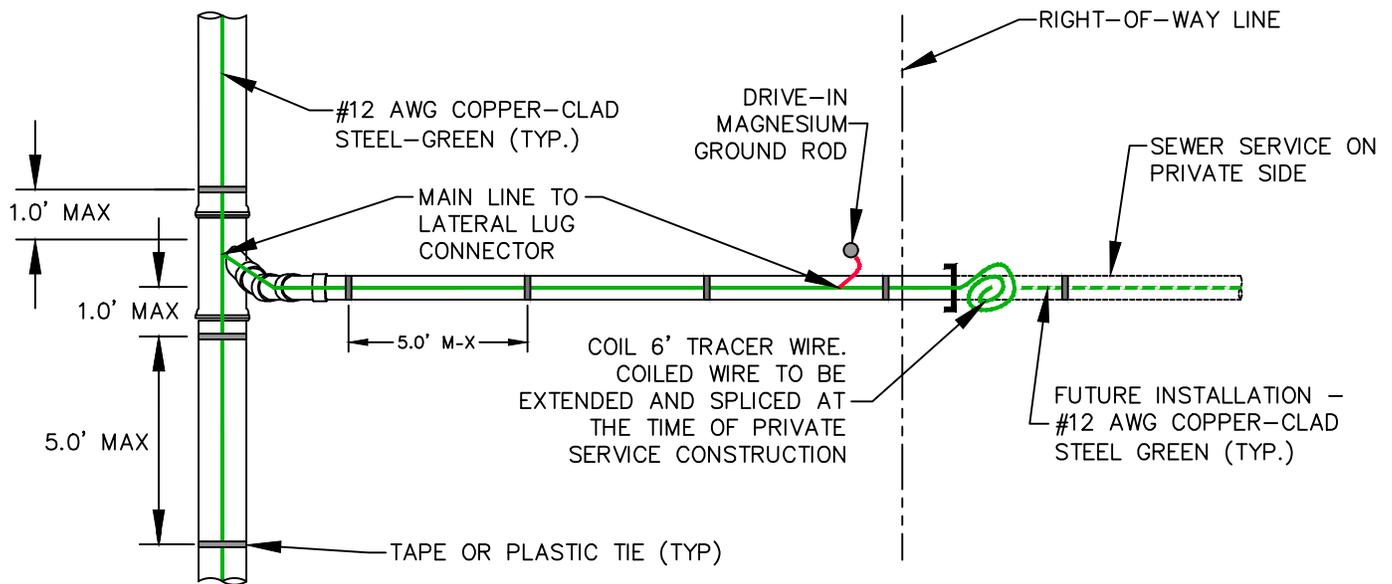
LATERAL PLAN
NO SCALE



LATERAL PROFILE
NO SCALE

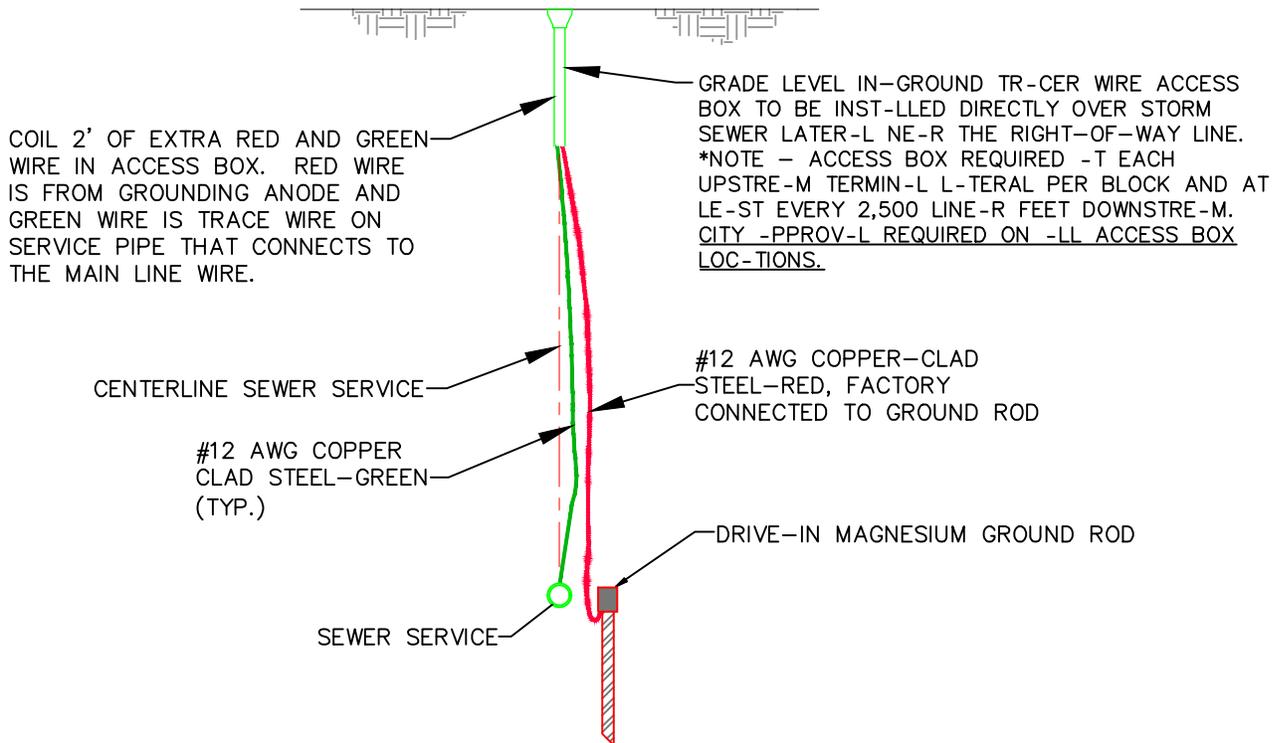
NOTES:

1. WIRE SHOWN AWAY FROM PIPE FOR CLARITY. WIRE SHALL BE INSTALLED IMMEDIATELY ADJACENT TO THE SERVICE PIPE. THE WIRE SHALL BE FASTENED TO THE PIPE WITH TAPE OR PLASTIC TIES AT 5' INTERVALS.
2. TRACER WIRE NOT REQUIRED FOR REHABILITATION PROJECTS.



SEWER SERVICE PLAN

NO SCALE



SEWER SERVICE SECTION

NO SCALE

NOTES:

1. WIRE SHOWN AWAY FROM PIPE FOR CLARITY. WIRE SHALL BE INSTALLED IMMEDIATELY ADJACENT TO THE SERVICE PIPE. THE WIRE SHALL BE FASTENED TO THE PIPE WITH TAPE OR PLASTIC TIES AT 5' INTERVALS.
2. TRACER WIRE NOT REQUIRED FOR REHABILITATION PROJECTS.

REVISION	

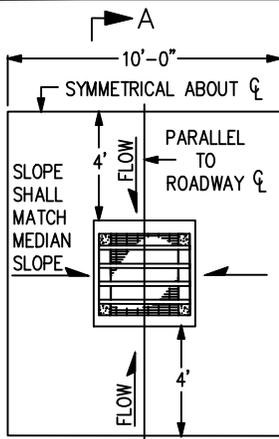


TRACER WIRE DETAILS SANITARY SEWER SERVICE

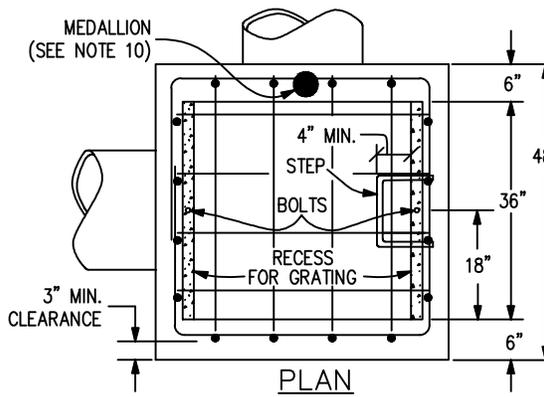
PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

SD38

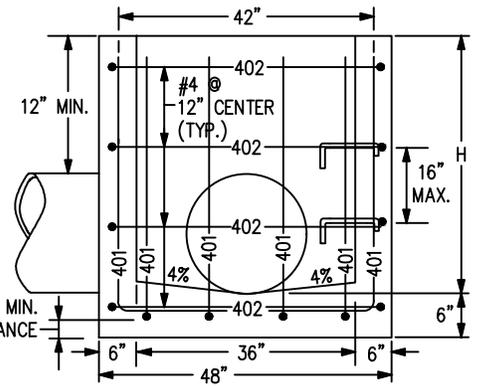
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CHECKED BY: SM
APPROVED BY: JH



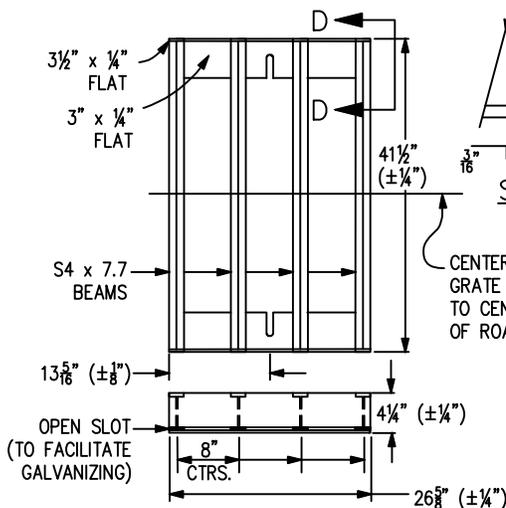
INLET WITH DITCH PAVING



PLAN



ELEVATION
CONCRETE INLET

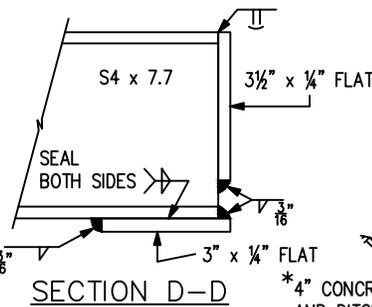


STANDARD INLET GRATE

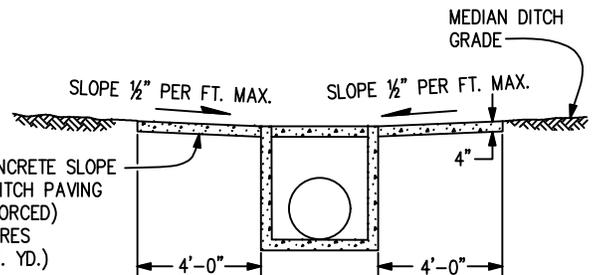
STEEL GRATE QUANTITIES

NO. PIECES	DESCRIPTION	LENGTH	LBS PER FT.	WEIGHT (LBS.)
4	S4 x 7.7 BEAM	41"	7.90	106
2	3 1/2" x 1/4" FLAT	26 5/8"	2.98	13
2	3" x 1/4" FLAT	26 5/8"	2.55	12

TOTAL LBS. - 131



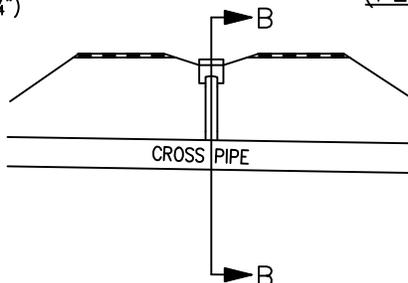
SECTION D-D



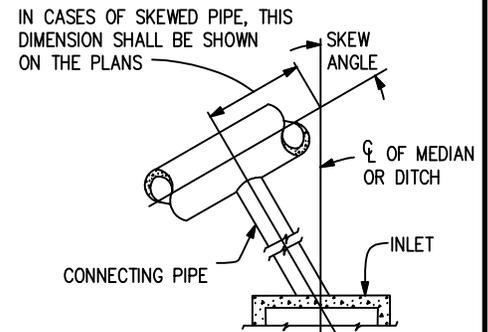
SECTION A-A

*CONCRETE SLOPE AND DITCH PAVING WILL BE REQUIRED WHEN SHOWN ON THE PLANS.

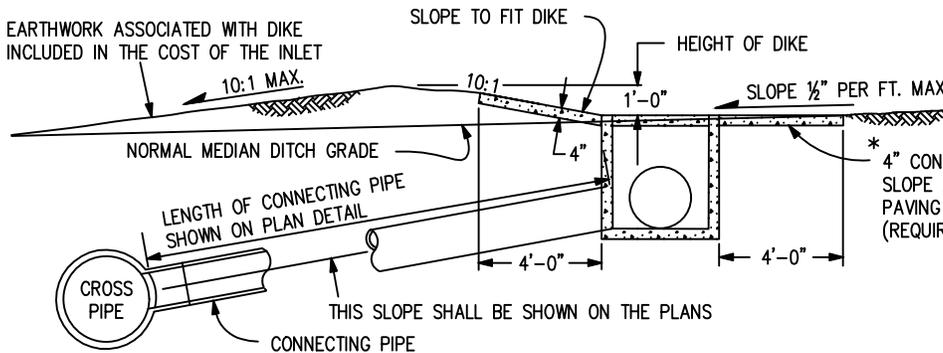
INLET AT BOTTOM OF VERTICAL CURVE
(FLOW FROM TWO DIRECTIONS)



SECTION VIEW



INLET CONNECTED TO A
SKEWED CROSS PIPE



SECTION B-B

SECTION A-A

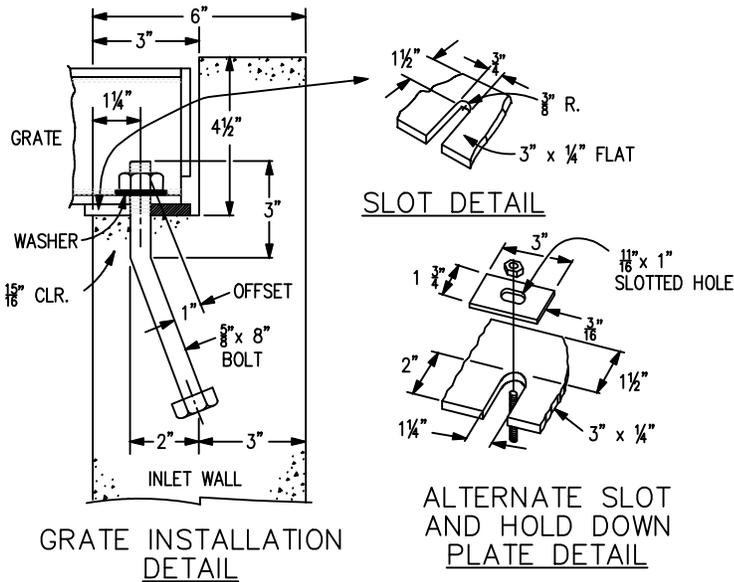
INLET CONNECTED
TO A CROSS PIPE

INLET ON GRADE
(FLOW FROM ONE DIRECTION)

09/03/2024
01/01/2023
REVISIONS

INLET, TYPE C (1 OF 2)
PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

SW1.1
DRAWN BY: NLS
CHECKED BY: JS
APPROVED BY: JH



QUANTITIES FOR ONE INLET

H	CONCRETE (CU. YDS.)	STEEL (LBS.)	NO. STEPS REQ'D.
2'-6"	1.0	76	0
3'-0"	1.1	81	0
3'-6"	1.2	97	0
4'-0"	1.3	102	1
4'-6"	1.5	117	2
5'-0"	1.6	123	2
5'-6"	1.7	138	2
6'-0"	1.9	143	3
6'-6"	2.0	159	3
7'-0"	2.1	164	3
7'-6"	2.2	180	4
8'-0"	2.4	185	4
8'-6"	2.5	200	4
9'-0"	2.6	206	5
9'-6"	2.8	221	5
10'-0"	2.9	236	6
11'-6"	3.3	252	6

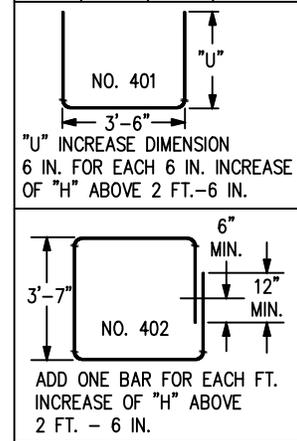
GENERAL NOTES

- INLET TYPE C IS NOT HS-20 RATED AND SHALL NOT BE PLACED IN PAVED ROADWAYS. THIS INLET SHALL BE USED ONLY OUTSIDE PAVED ROADWAYS.
- CONCRETE SHALL BE CLASS B. INLET MAY BE CAST-IN-PLACE OR PRECAST.
- REINFORCING BARS SHALL BE GRADE 60, EPOXY COATED, AND DEFORMED #4, AND SHALL HAVE A MIN. 2 INCH CLEARANCE. CUT OR BEND AROUND PIPES AS REQUIRED.
- CONCRETE SLOPE AND DITCH PAVING SHALL BE IN ACCORDANCE WITH SECTION 507. REINFORCEMENT FOR CONCRETE SLOPE PAVING SHALL BE 6 X 6 - W1.4 X W1.4 OR 6 X 6 - W2.1 X W2.1.
- STRUCTURAL STEEL FOR GRATES AND GRATE INSTALLATION HARDWARE SHALL BE GALVANIZED, AND SHALL BE IN ACCORDANCE WITH SUBSECTION 712.06.
- THE STANDARD INLET GRATES SHALL BE USED ON ALL TYPE C INLETS UNLESS CLOSE MESH INLET GRATES ARE SPECIFIED ON THE PLANS.
- CLOSE MESH GRATES ARE RECOMMENDED WHERE FOOT TRAFFIC OR BICYCLE ROUTES ARE IN CLOSE PROXIMITY TO GRATE. THIS GRATE IS NOT ADA COMPLIANT OR BICYCLE FRIENDLY AND SHALL NOT BE PLACED DIRECTLY IN SIDEWALKS, CROSSWALKS OR BIKE PATHS.
- STEPS SHALL BE PROVIDED WHEN INLET DIMENSION "H" IS EQUAL TO OR GREATER THAN 3 FEET - 6 INCHES AND SHALL CONFORM TO AASHTO M 199.
- SEE STANDARD PLAN M-604-11, FOR REINFORCEMENT AROUND THE PIPE OPENING.
- ALL INLETS SHALL HAVE A 4 INCH DIA. METAL MEDALLION WITH A "NO DUMPING DRAINS TO STREAM" MESSAGE ON IT. THE MEDALLION SHALL HAVE A FISH SYMBOL WITH A BLUE BACKGROUND. IT SHALL BE FIRMLY ATTACHED TO THE TOP OF THE INLET WITH A PERMANENT FASTENER.

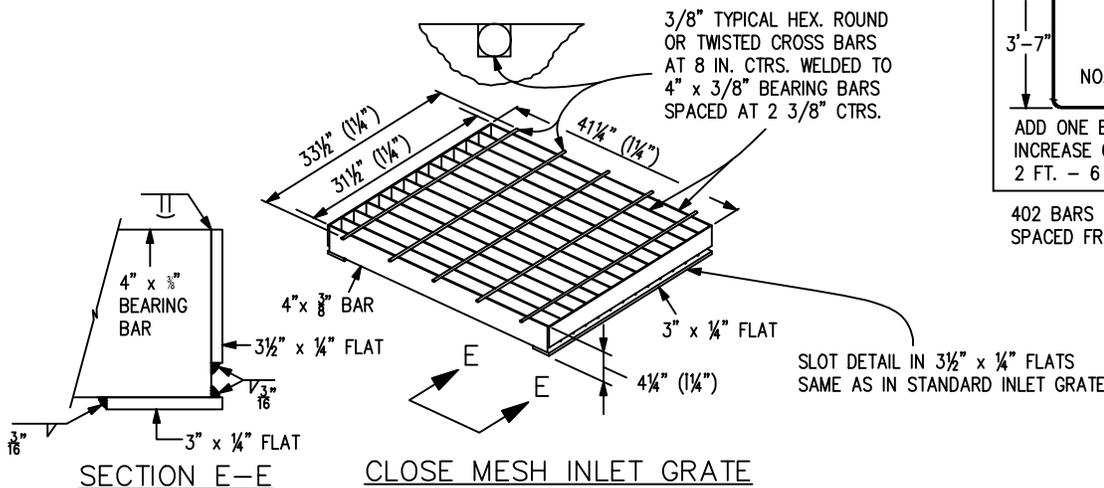
▼ PIPE INSIDE DIAMETER SHALL BE 30 IN. OR LESS. CONCRETE AND STEEL QUANTITIES ARE FOR ONE ENTIRE INLET BEFORE DEDUCTION FOR VOLUME OCCUPIED BY PIPE. WEIGHT OF STEEL INCLUDES A RING FOR THE MAXIMUM PIPE DIAMETER.

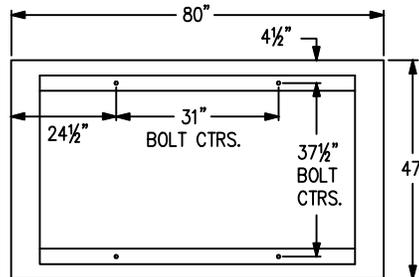
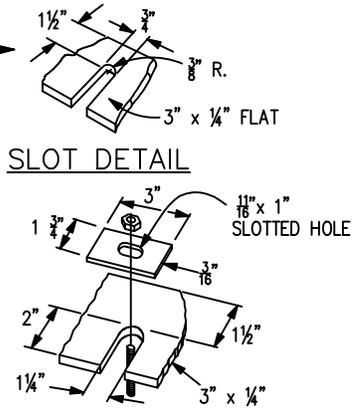
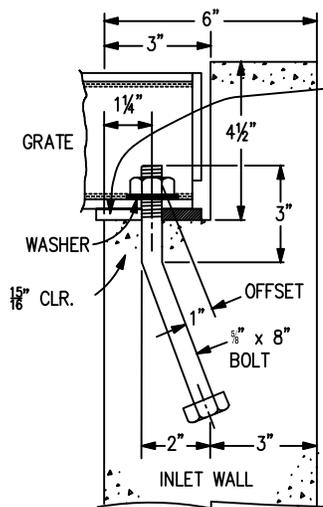
BAR LIST FOR H = 2 FT.-6 IN. AND BENDING DIAGRAM

MARK	NO. REQ'D.	HEIGHT	LENGTH
401	2	2'-2 1/2"	8'-0"
401	6	2'-7"	8'-8"
402	4	"U"	15'-4"



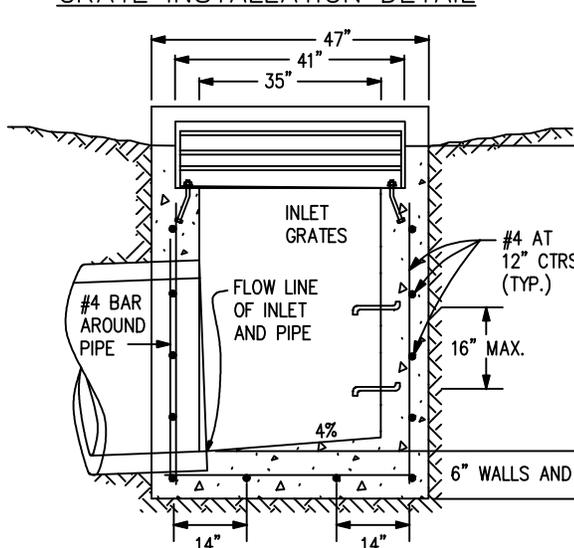
402 BARS SHALL BE EQUALLY SPACED FROM EACH OTHER.



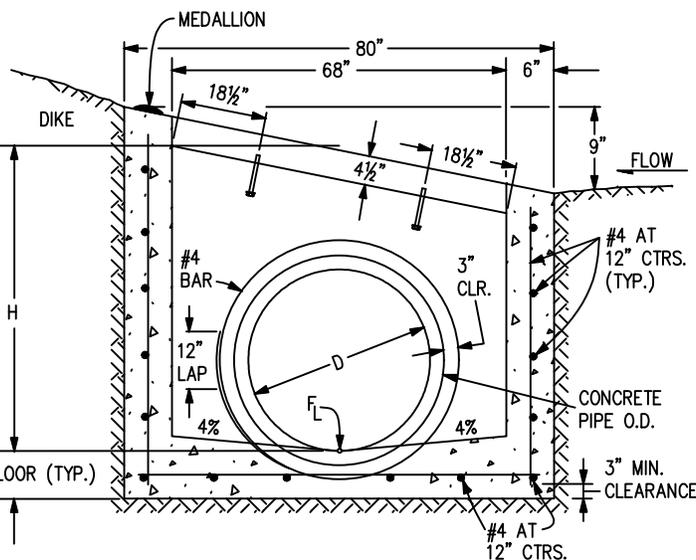


PLAN VIEW
(SHOWING ANCHOR BOLT LAYOUT)

GRATE INSTALLATION DETAIL

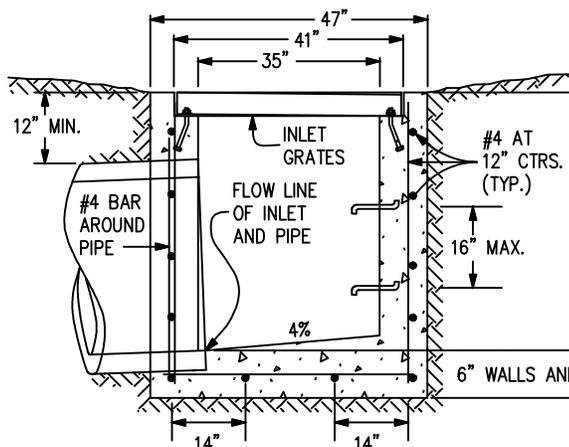


TRANSVERSE CROSS SECTION

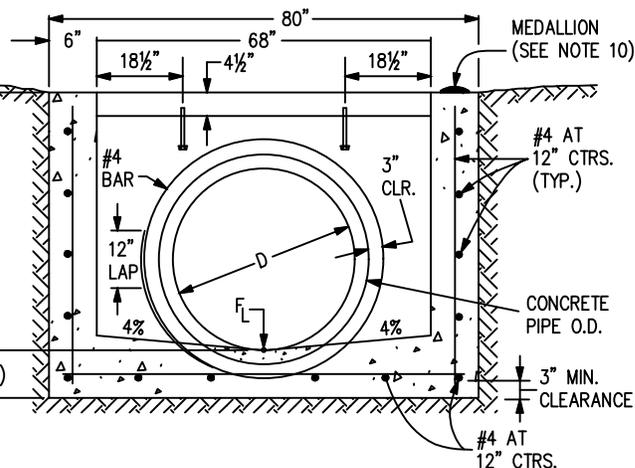


LONGITUDINAL CROSS SECTION

SLOPING GRATE INSTALLATION



TRANSVERSE CROSS SECTION



LONGITUDINAL CROSS SECTION

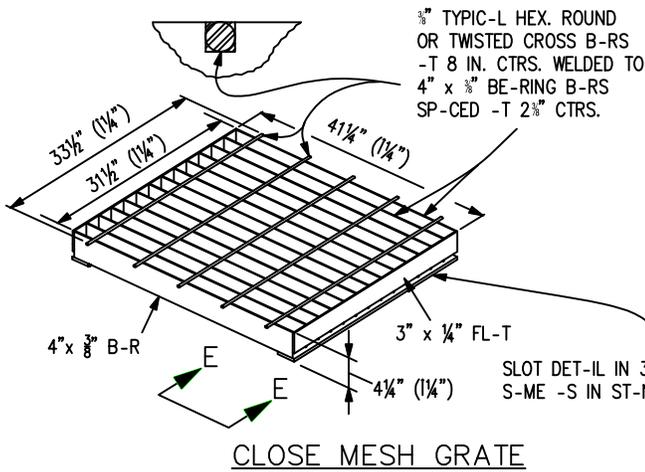
LEVEL GRATE INSTALLATION

GENERAL NOTES

1. INLET TYPE D IS NOT HS-20 R-TED -ND SH-LL NOT BE PL-CED IN P-VED RO-DW-YS. THIS INLET SH-LL BE USED ONLY OUTSIDE P-VED RO-DW-YS.
2. CONCRETE SH-LL BE CL-SS B. INLET M-Y BE C-ST-IN-PL-CE OR PREC-ST.
3. SEE PL-NS FOR SIZE -ND LOC-TION OF PIPE.
4. STRUCTUR-L STEEL FOR GR-TES -ND GR-TE INST-LL-TION H-RDW-RE SH-LL BE G-LV-NIZED -ND SH-LL BE IN -CCORD-NCE WITH SUBSECTION 712.06.
5. ST-ND-RD INLET GR-TES SH-LL BE USED ON -LL TYPE D INLETS UNLESS CLOSE MESH GR-TES -RE SPECIFIED ON THE PL-NS.
6. CLOSE MESH GR-TES -RE RECOMMENDED WHERE FOOT TR-FFIC OR BICYCLE ROUTES -RE IN CLOSE PROXIMITY TO GR-TE. THIS GR-TE IS NOT -D-COMPLI-NT OR BICYCLE FRIENDLY -ND SH-LL NOT BE PL-CED DIRECTLY IN SIDEW-LKS, CROSSW-LKS OR BIKE P-THS.
7. STEPS SH-LL BE PROVIDED WHEN INLET DIMENSION "H" IS EQU-L TO OR GRE-TER TH-N 3 FEET-6 INCHES -ND SH-LL CONFORM WITH --SHTO M 199.
8. REINFORCING B-RS SH-LL BE GR-DE 60, EPOXY CO-TED, -ND DEFORMED #4, -ND SH-LL H-VE - 2 INCH MIN. CLE-R-NCE. CUT OR BEND B-RS -ROUND PIPE -S REQUIRED.
9. -LL INLETS SH-LL H-VE - 4 INCH DI-. MET-L MED-LLION WITH - "NO DUMPING DR-INS TO STRE-M" MESS-GE ON IT. THE MED-LLION SH-LL H-VE - FISH SYMBOL WITH - BLUE B-CKGROUND. IT SH-LL BE FIRMLY -TT-CHED TO THE INLET'S SURF-CE WITH - PERM-NENT F-STENER.

"H" FT.	CONCRETE CU. YDS.	STEEL LBS.	CIRCUL-R PIPE R-NGE
			INSIDE DI-. IN. - "D"
3.0	1.5	127	18
3.5	1.7	149	18-24
4.0	1.9	157	18-30
4.5	2.0	179	18-36
5.0	2.2	187	18-42
5.5	2.4	208	18-42
6.0	2.6	215	18-42
6.5	2.8	236	18-42
7.0	2.9	243	18-42
7.5	3.1	264	18-42
8.0	3.3	271	18-42
8.5	3.5	292	18-42
9.0	3.6	299	18-42
9.5	3.8	320	18-42
10.0	4.0	327	18-42

▼ CONCRETE -ND STEEL QU-NTITIES -RE FOR ONE ENTIRE INLET BEFORE DEDUCTION FOR VOLUME OCCUPIED BY PIPE. WEIGHT OF STEEL INCLUDES - RING FOR THE M-XIMUM PIPE DI-METER.

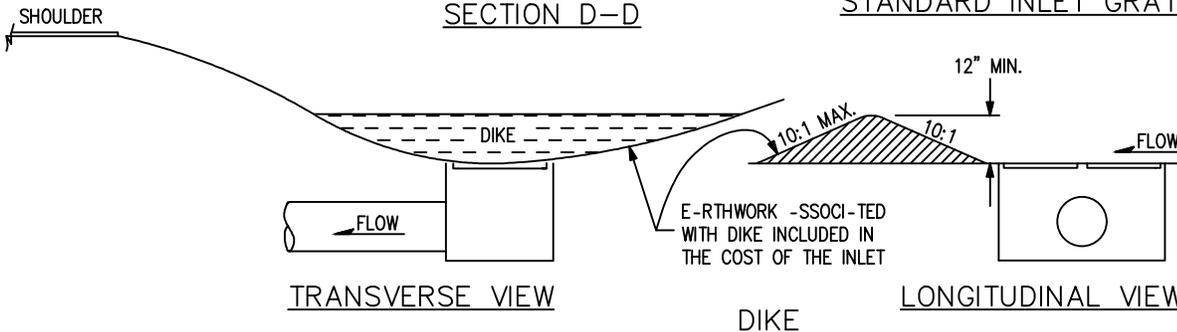
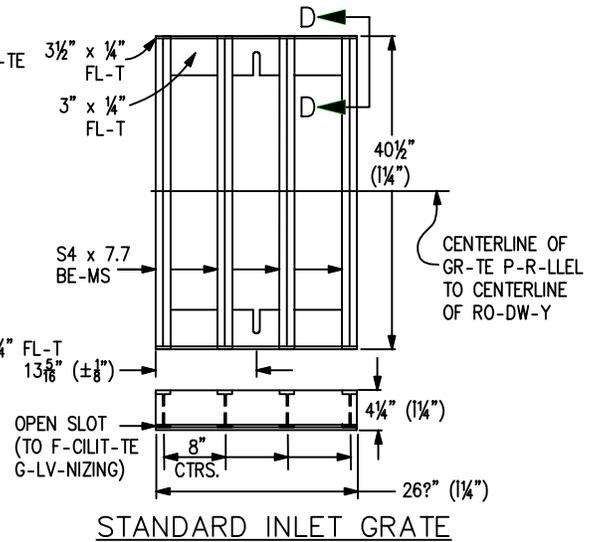
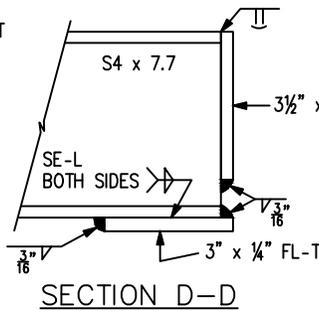
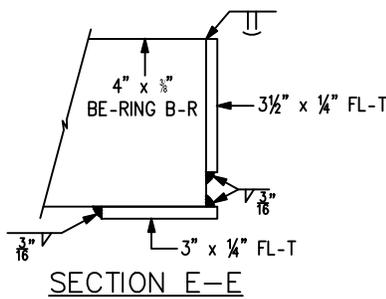


TWO STEEL GRATE PER INLET QUANTITIES

NO. PIECES	DESCRIPTION	LENGTH	LBS PER FT.	WEIGHT (LBS.)
8	S4 x 7.7 BE-M	40"	7.70	206
4	3 1/2" x 1/4" FL-T	26 5/8"	2.98	26
4	3" x 1/4" FL-T	26 5/8"	2.55	24

OUTLET PIPE INSIDE DI-. FT. - "D"	MIN. "H" FT.
1.5	3.0
2.0	3.5
2.5	4.0
3.0	4.5
3.5	5.0

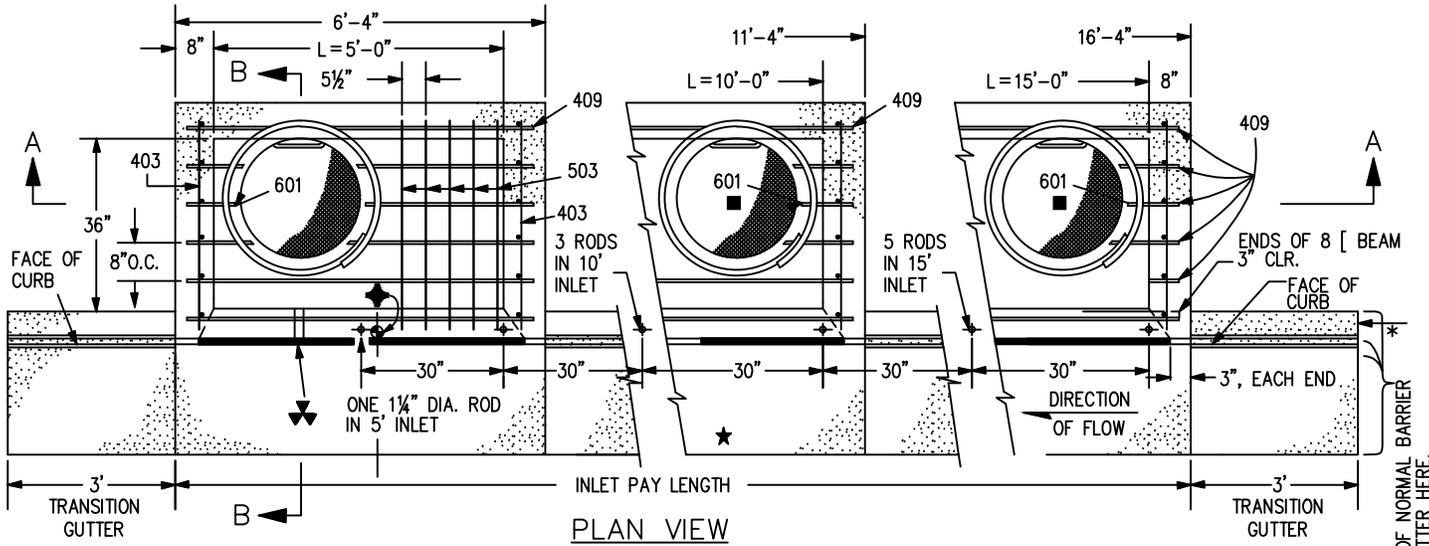
TOT-L LBS. - 256



★ FOR LENGTH (L) 10 FT. OR MORE, PROVIDE MAINTENANCE ACCESS AT BOTH ENDS WITH AN ADDITIONAL MANHOLE RING AND COVER. CUT REINFORCEMENT BAR ACCORDINGLY.

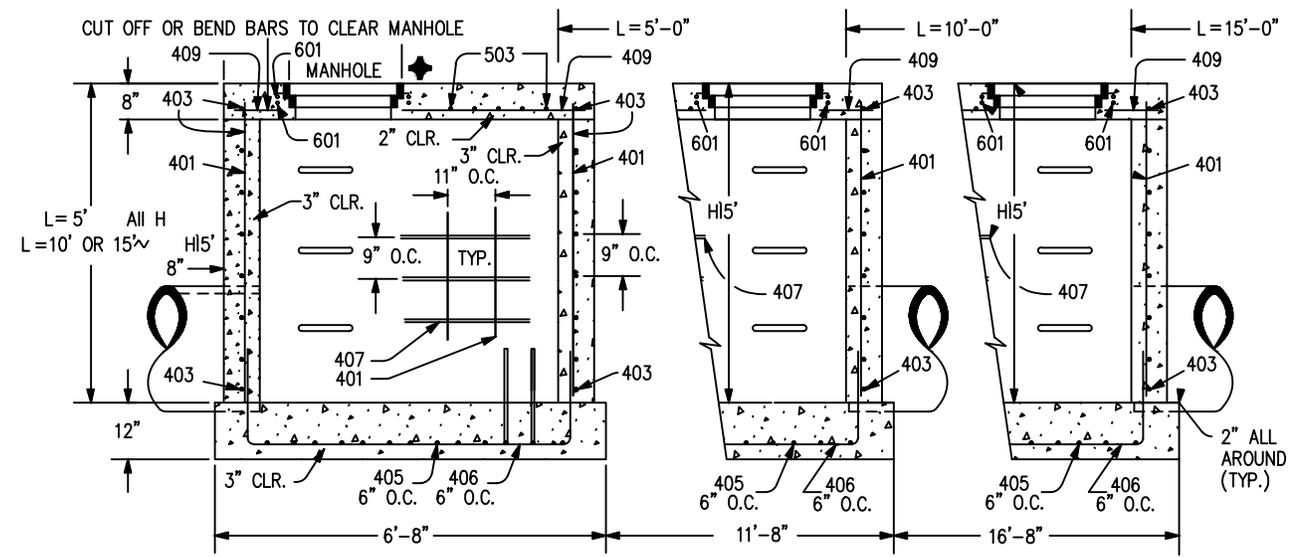
★ STATION POINT AT MIDPOINT OF INLET ALONG FLOWLINE

* WHEN A TYPE R INLET IS USED WITH MOUNTABLE CURB AND GUTTER, 5 FT. TRANSITION SHALL BE CONSTRUCTED. TRANSITION SHALL BE PAID FOR AS CURB AND GUTTER.

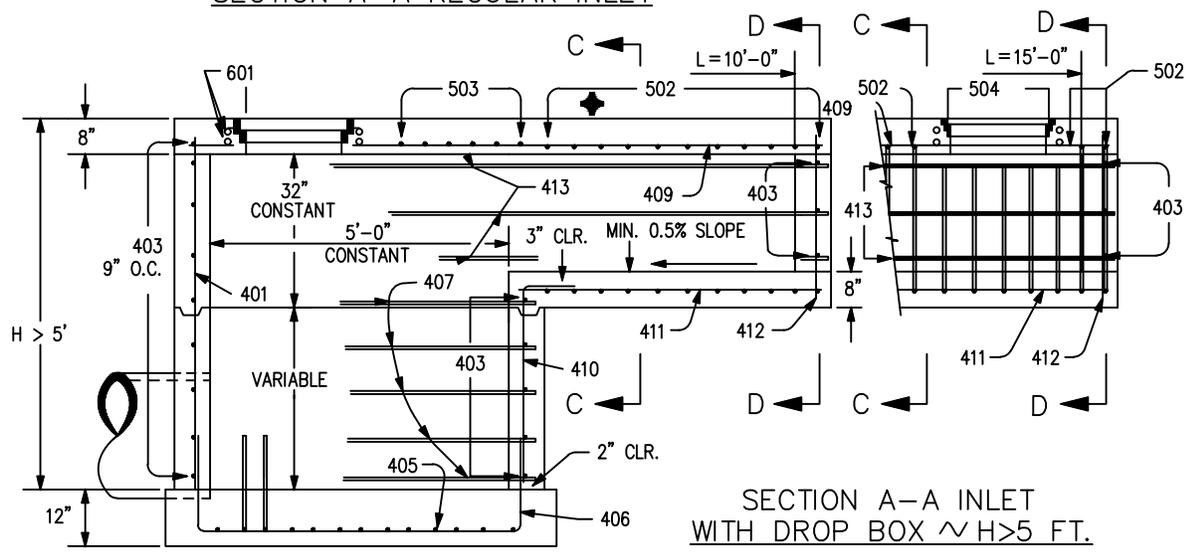


PLAN VIEW

MEET SHAPE OF NORMAL BARRIER CURB AND GUTTER HERE.



SECTION A-A REGULAR INLET



SECTION A-A INLET WITH DROP BOX ~ H > 5 FT.

09/03/2024	REVISIONS
01/01/2023	



INLET, TYPE R (1 OF 4)
 PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
 211 EAST "D" ST. PUEBLO, CO 81003
 (719) 553-2295 PHONE

SW3.1
 DRAWN BY: NLS
 CHECKED BY: JS
 APPROVED BY: JH

M-RK	B-R # OR SIZE	O.C. SP-CING	TYPE	-LL INLETS		INLETS: H 5 FT.				INLETS: H > 5 FT.			
				L = 5 FT.		L = 10 FT.		L = 15 FT.		L = 10 FT.		L = 15 FT.	
				NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH	NO. REQ'D.	LENGTH
401	4	11"	II	15	*	21	*	26	*	11	*	11	*
402	4	11"	II	7	*	13	*	18	*	7	*	7	*
403	4	9"	II	*	4'-0"	*	4'-0"	*	4'-0"	*	4'-0"	*	4'-0"
405	4	6"	VI	11	6'-10"	21	6'-10"	31	6'-10"	11	6'-10"	11	6'-10"
406	4	6"	VIII	7	8'-10"	7	13'-10"	7	18'-10"	7	8'-10"	7	8'-10"
407	4	9"	II	*	5'-10"	*	10'-10"	*	15'-10"	*	5'-10"	*	5'-10"
408	4	12"	II	3	6'-10"	3	11'-10"	3	16'-0"	3	11'-10"	3	16'-0"
409	4	8"	II	6	5'-10"	6	10'-10"	6	15'-10"	6	10'-10"	6	15'-10"
410	4	11"	VII							3		3	*
411	4	11"	II							3	5'-2"	3	10'-2"
412	4	11"	II							3	2'-9"	3	2'-9"
413	4	9"	II							7	10'-10"	7	15'-10"
501	5	5½"	IV	11	3'-4"	22	3'-4"	33	3'-4"	22	3'-4"	33	3'-4"
502	5	5½"	III							11	11'-5"	17	11'-5"
503	5	5½"	II	5	3'-6"	16	3'-6"	27	3'-6"	6	3'-6"	6	3'-6"
504	5	5½"	IX									5	8'-4"
601	6	2½"	V	2	8'-10"	2	8'-10"	2	8'-10"	2	8'-10"	4	8'-10"
8[8.5				1	5'-10"	1	10'-10"	1	15'-10"	1	10'-10"	1	15'-10"
				2 B-RS, 1 RODS		4 B-RS, 3 RODS		8 B-RS, 5 RODS		4 B-RS, 3 RODS		8 B-RS, 5 RODS	

* V-RI-BLE REFER TO T-BLE TWO.

■ INCLUDE #4, 18 IN. B-RS (SEE CH-NNEL L-YOUT).

REGUL-R INLETS

DROP BOX INLETS

TABLE ONE ~BAR LIST FOR CURB INLETS, TYPE "R"

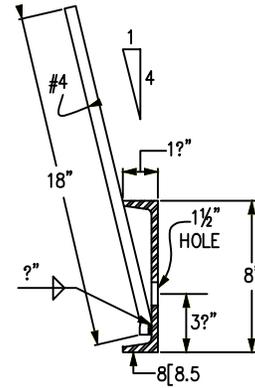
"H"	LENGTH			NO. REQ'D.		NO. REQ'D.		L = 5 FT.		L = 10 FT.		L = 15 FT.	
				REGUL-R		DROP BOX		CONC.	STEEL	CONC.	STEEL	CONC.	STEEL
	401	402	410	403	407	403	407	CU. YDS.	LBS.	CU. YDS.	LBS.	CU. YDS.	LBS.
3'-0"	2'-8"	1'-8"		10	7			3.2	285	5.3	497	7.4	706
3'-6"	3'-2"	2'-2"		10	7			3.4	305	5.7	528	7.9	747
4'-0"	3'-8"	2'-8"		12	9			3.7	326	6.0	559	8.4	786
4'-6"	4'-2"	3'-2"		12	9			3.9	334	6.4	571	8.8	803
5'-0"	4'-8"	3'-8"		14	11			4.1	354	6.7	602	9.3	844
5'-6"	5'-2"	4'-2"	3'-5"	16	13	15	6	4.4	375	6.0	607	7.4	850
6'-0"	5'-8"	4'-8"	3'-11"	16	13	16	6	4.6	382	6.2	616	7.6	860
6'-6"	6'-2"	5'-2"	4'-5"	18	15	18	8	4.8	402	6.4	637	7.8	880
7'-0"	6'-8"	5'-8"	4'-11"	20	17	19	10	5.0	423	6.6	654	8.0	897
7'-6"	7'-2"	6'-2"	5'-5"	20	17	20	10	5.3	430	6.9	664	8.3	907
8'-0"	7'-8"	6'-8"	5'-11"	22	19	22	12	5.5	451	7.1	684	8.5	927
8'-6"	8'-2"	7'-2"	6'-5"	24	21	23	14	5.7	471	7.3	702	8.7	944
9'-0"	8'-8"	7'-8"	6'-11"	24	21	24	14	6.0	479	7.6	711	9.0	954
9'-6"	9'-2"	8'-2"	7'-5"	26	23	26	16	6.2	499	7.8	732	9.2	974
10'-0"	9'-8"	8'-8"	7'-11"	28	25	27	18	6.4	520	8.0	749	9.4	992
10'-6"	10'-2"	9'-2"	8'-5"	28	25	28	18	6.7	527	8.3	759	9.7	1001
11'-0"	10'-8"	9'-8"	8'-11"	30	27	30	20	6.9	547	8.5	779	9.9	1022

NOTES: FOR L= 5 FT., L= 10 FT., -ND L= 15 FT.
 REGUL-R INLETS: TOT-L QU-NTITIES NEEDED -RE OUTSIDE THE HE-VY BL-CK LINE.
 DROP BOX INLETS: TOT-L QU-NTITIES NEEDED -RE INSIDE THE HE-VY BL-CK LINE.
 STEEL WEIGHTS DO NOT INCLUDE STRUCTUR-L STEEL CH-NNEL.

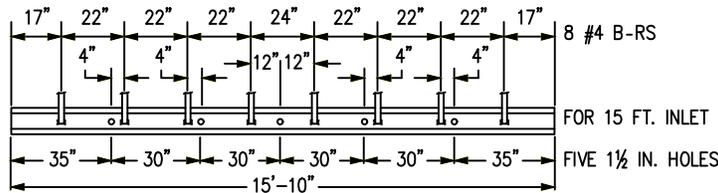
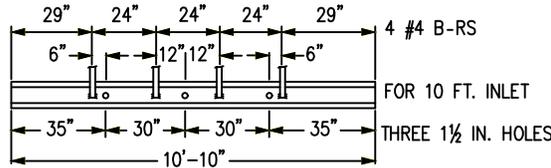
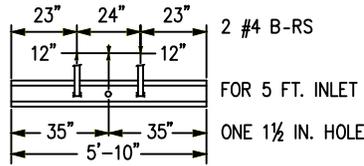
TABLE TWO ~BARS AND QUANTITIES VARIABLE WITH "H"

GENERAL NOTES

1. CONCRETE SH-LL BE CL-SS B. INLET M-Y BE C-ST-IN-PL-CE OR PREC-ST.
2. CONCRETE W-LLS SH-LL BE FORMED ON BOTH SIDES -ND SH-LL BE 8 INCHES THICK.
3. INLET STEPS SH-LL BE IN CONFORM-NCE WITH --SHTO M 199.
4. CURB F-CE -SSEMBLY SH-LL BE G-LV-NIZED -FTER WELDING.
5. EXPOSED CONCRETE CORNERS SH-LL BE CH-MFERED 3/4 OF - INCH. CURB -ND GUTTER CORNERS SH-LL BE FINISHED TO M-TCH THE EXISTING CURB -ND GUTTER BEYOND THE TR-NSITION GUTTER.
6. REINFORCING B-RS SH-LL BE DEFORMED -ND SH-LL H-VE - 2 INCH MINIMUM CLE-R-NCE. -LL REINFORCING B-RS SH-LL BE GR-DE 60 -ND EPOXY CO-TED.
7. DIMENSIONS -ND WEIGHTS OF TYPIC-L M-NHOLE RING -ND COVER -RE NOMIN-L.
8. M-TERI-L FOR M-NHOLE RINGS -ND COVERS SH-LL BE GR-Y OR DUCTILE C-ST IRON IN -CCORD-NCE WITH SUBSECTION 712.06.
9. SINCE PIPE ENTRIES INTO THE INLET -RE V-RI-BLE, THE DIMENSIONS SHOWN -RE TYPIC-L. -CTU-L DIMENSIONS -ND QU-NITIES FOR CONCRETE -ND REINFORCEMENT SH-LL BE -S REQUIRED IN THE WORK. QU-NITIES INCLUDE VOLUMES OCCUPIED BY PIPES.
10. -LL M-NHOLE COVERS SH-LL BE C-ST WITH - "NO DUMPING DR-INS TO STRE-M" MESS-GE -ND - FISH SYMBOL. THE SURF-CE OF THE M-NHOLE COVER SH-LL H-VE - NON-SLIP P-TTERN.
11. STRUCTUR-L STEEL SH-LL BE G-LV-NIZED -ND SH-LL BE IN -CCORD-NCE WITH SUBSECTION 712.06.

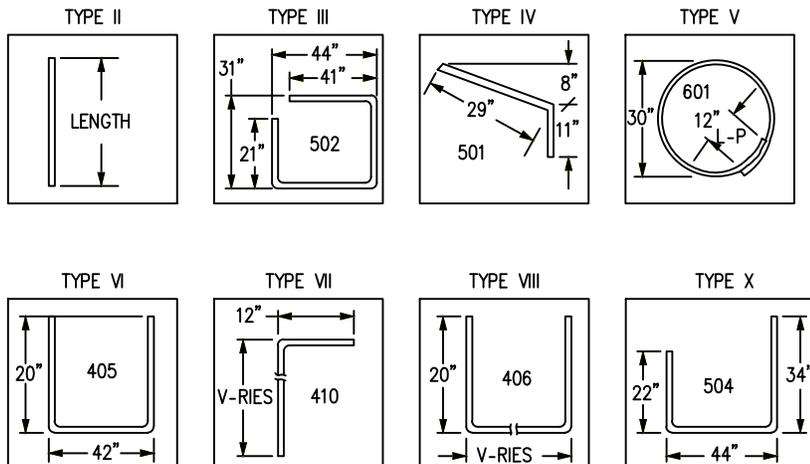


SECTION - T HOLE (TYP.)

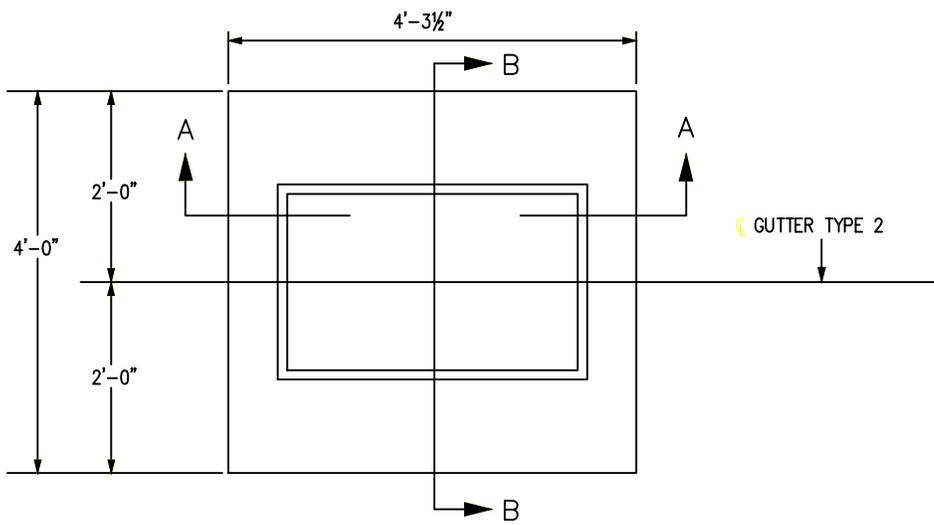


CHANNEL LAYOUT DETAILS

SEE CURB F-CE -SSEMBLY ON SHEET 1.

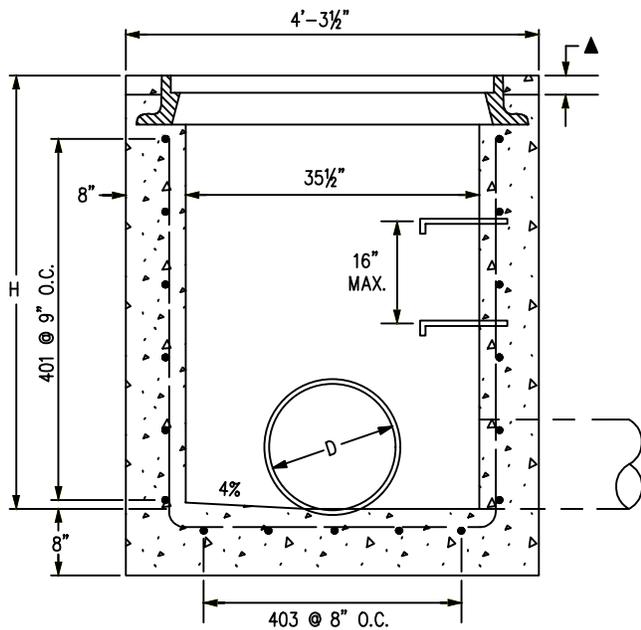


BAR BENDING DIAGRAMS ~ (DIMENSIONS ARE OUT-TO-OUT OF BAR)

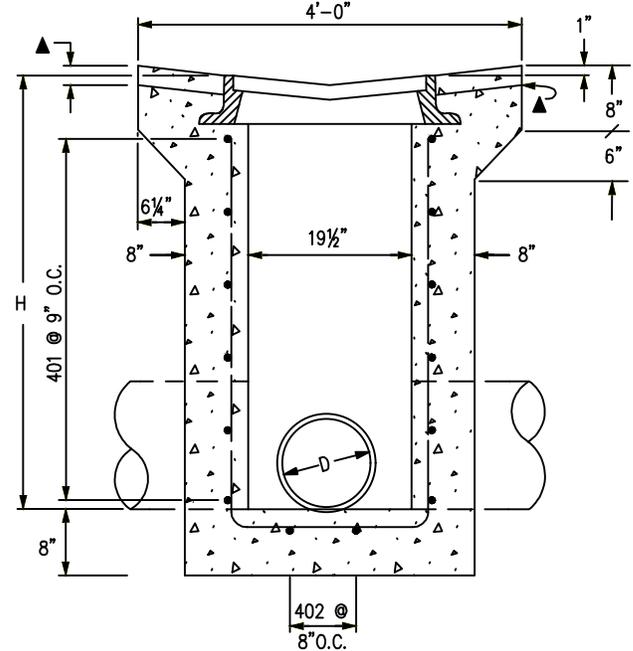


▲ WHEN HMA MATERIAL IS TO EXTEND TO THE EDGE OF THE GRATING FRAME, CONCRETE MAY BE DEPRESSED.

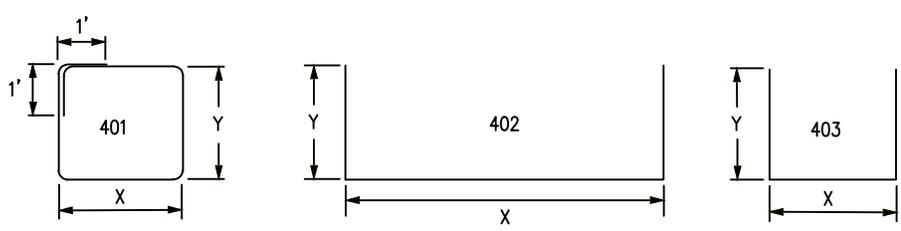
PLAN VIEW
TYPE 13 INLET FOR GUTTER TYPE 2



SECTION A-A
D MAX = 30 IN. FOR H > 4 FT.



SECTION B-B
D MAX = 18 IN. FOR ALL H



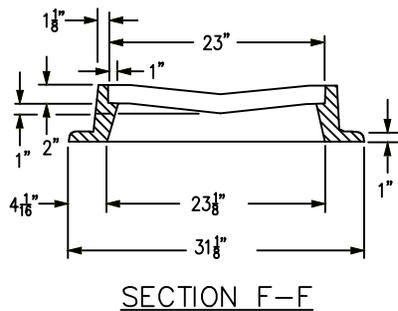
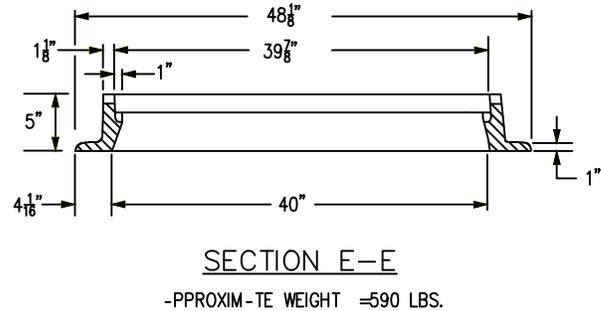
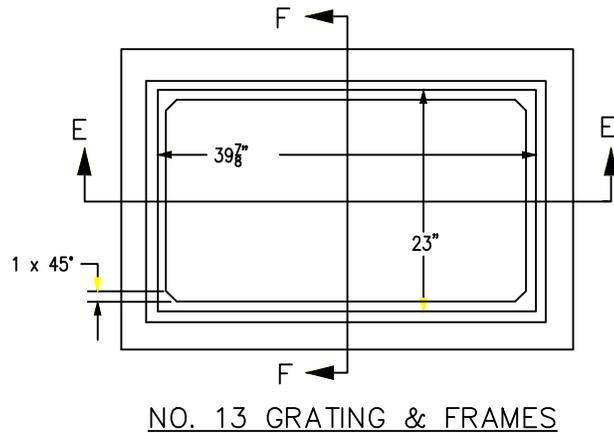
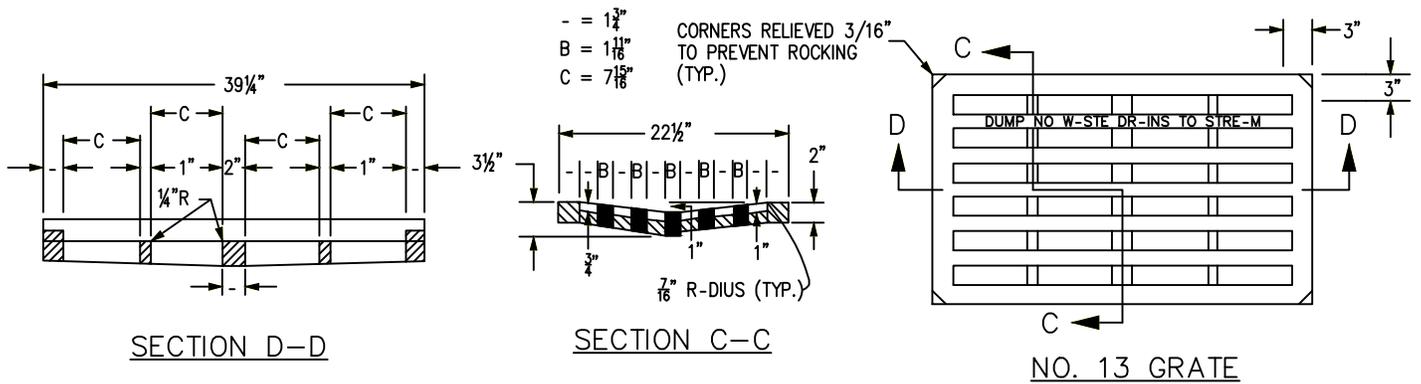
BENDING DIAGRAMS
ALL DIMENSIONS ARE OUT-TO-OUT OF BAR.

09/03/2024
01/01/2023
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INLET, TYPE 13 (1 OF 2)
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211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

SW4.1
DRAWN BY: NLS
CHECKED BY: JS
APPROVED BY: JH



GENERAL NOTES

- CONCRETE SHALL BE CLASS B. INLET MAY BE CAST-IN-PLACE OR PRECAST.
- CAST-IN-PLACE CONCRETE WALLS SHALL BE FORMED ON BOTH SIDES.
- EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3/4" OF INCH.
- REINFORCING BARS SHALL BE DEFORMED #4 AND SHALL HAVE A MINIMUM CLEARANCE. ALL REINFORCING BARS SHALL BE GRADE 60 AND EPOXY COATED.
- STEPS SHALL BE PROVIDED WHEN INLET DIMENSION "H" IS EQUAL TO OR GREATER THAN 3 FEET-6 INCHES AND SHALL CONFORM TO ASHTO M 199.
- ALL GRATES AND FRAMES SHALL BE GRAY OR DUCTILE CAST IRON IN ACCORDANCE WITH SUBSECTION 712.06. GRATES AND FRAMES SHALL BE DESIGNED TO WITHSTAND HS 20 LOADING.
- LOCATION POINT IS AT THE CENTER OF THE INLET.
- GRATE SHALL HAVE "DUMP NO WASTE DRINS TO STREET" MESSAGE CAST ON SURFACE.

H	CONCRETE	REINFORCING STEEL	NO. OF 401 BARS REQ'D.	MINIMUM PIPE I.D.	
	CU. YDS.	Ø LB.		SEC. A-A IN.	SEC. B-B IN.
3'-0"	1.3	72	4	18	18
3'-6"	1.5	76	4	24	18
4'-0"	1.6	90	5	30	18
4'-6"	1.8	104	6	30	18
5'-0"	1.9	109	6	30	18
5'-6"	2.1	122	7	30	18
6'-0"	2.2	136	8	30	18
6'-6"	2.4	141	8	30	18
7'-0"	2.5	154	9	30	18
7'-6"	2.7	168	10	30	18
8'-0"	2.8	173	10	30	18
8'-6"	3.0	187	11	30	18
9'-0"	3.1	200	12	30	18
9'-6"	3.3	205	12	30	18
10'-0"	3.4	219	13	30	18

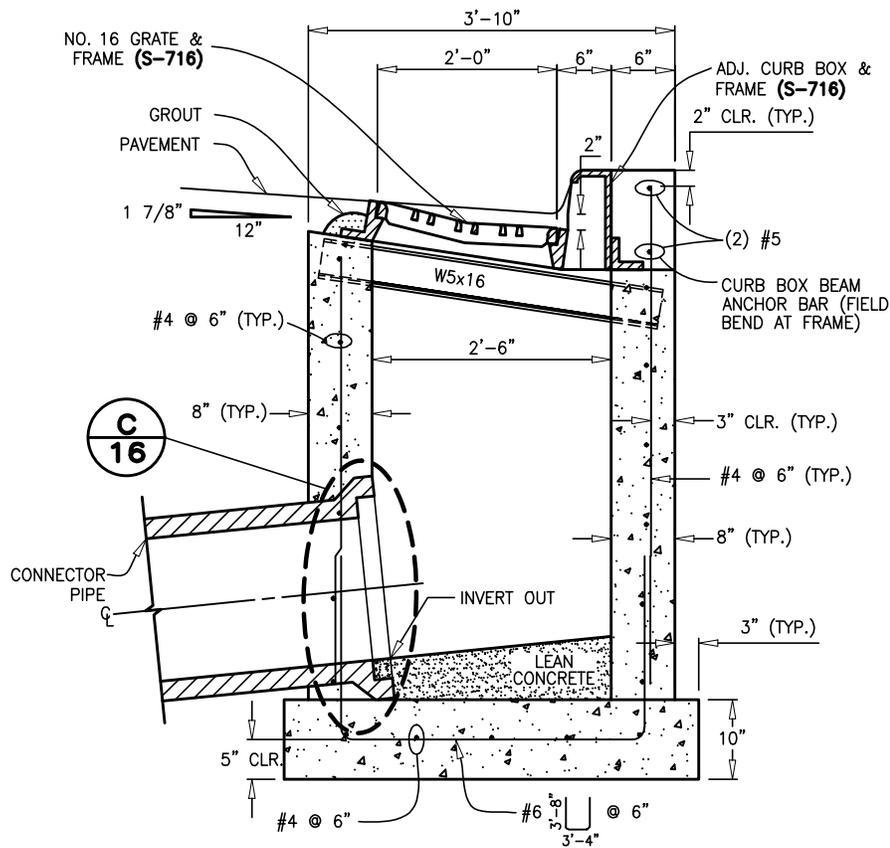
Ø INCLUDES 1% FOR OVERRUN.
NOTE: CONCRETE QUANTITIES INCLUDE VOLUME OCCUPIED BY PIPE.

QUANTITIES FOR ONE INLET

M-RK	NO. REQ'D.	DIMENSIONS		LENGTH
		X	Y	
401	4	3'-6"	2'-2"	13'-4"
402	2	3'-4 1/2"	* 2'-6 1/2"	8'-5 1/2"
403	5	2'-1 1/2"	* 2'-7"	7'-2 1/2"

* ADD 6 IN. TO THIS DIMENSION FOR EACH 6 IN. INCREASE OF "H" OVER 3 FT.-0 IN.

BAR LIST FOR H = 3 FT.-0 IN.



B SECTION (TYPICAL, ALL SIZES)
NO SCALE

SINGLE NUMBER 16 INLET NOTES:

1. FOR PAYMENT PURPOSES, INLET STRUCTURES SHALL ALSO INCLUDE 2'-0" CURB & GUTTER TRANSITION SECTION AT EACH END OF INLET PLUS SIDEWALK SECTIONS WHERE REQUIRED BEHIND INLET STRUCTURE AND TRANSITION SECTIONS.
2. SUB-GRADE SHALL BE 6-12" OF CLASS B BEDDING COMPACTED PER COP STANDARD CONSTRUCTION SPECIFICATIONS, ON SUITABLE, UNDISTURBED MATERIAL. IF SUBGRADE IS UNSUITABLE, THE SUBGRADE SHALL BE OVEREXCAVATED AND STABILIZED WITH CLASS B BEDDING PER COP STANDARD CONSTRUCTION SPECIFICATIONS.
3. FLOOR SLOPE MAY BE POURED MONOLITHIC WITH BASE.
4. S_c = SLOPE OF CONNECTOR = 2% MIN.
5. UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS OR OTHERWISE APPROVED, ALL NO. 16 INLETS SHALL BE CONSTRUCTED WITH AN ADJUSTABLE CAST IRON CURB BOX (S-716).
6. DESIGN CONDITIONS FOR INLET ALLOWS DEPTHS OF 12'-0" (MAX). FOR INLETS MORE THAN 12'-0" FEET IN DEPTH, SHOP DRAWINGS AND DESIGN ANALYSIS SHALL BE SUBMITTED FOR APPROVAL.
7. ALL REINFORCING STEEL SHALL BE ASTM, A-615, GRADE 60 DEFORMED BARS. DIAMETER OF BEND MEASURED ON THE INSIDE OF THE BAR SHALL BE A MINIMUM OF 6 BAR DIAMETER.
8. ALL SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION, 2017.
9. NO FORMWORK SHALL WORK REMAIN INSIDE STRUCTURE WHEN COMPLETE.
10. CONCRETE MIX FOR GUTTER AND ANY ADDED STREET PANELS SHALL MEET CLASS 2 REQUIREMENTS FOR SULFATE RESISTANCE IN ACCORDANCE WITH CDOT STANDARD 601.04 ON STREETS WHERE MAGNESIUM CHLORIDE CHEMICAL DEICERS ARE APPLIED. REFER TO COP STANDARD CONSTRUCTION SPECIFICATIONS FOR REQUIREMENTS FOR SULFATE RESISTANCE IN CONCRETE EXPOSED TO EARTH.
11. SPLICING OF REINFORCING STEEL SHALL BE PERMITTED ONLY WHERE DETAILED IN DRAWINGS.
12. INLET WALLS SHALL BE FORMED BOTH INSIDE AND OUTSIDE CASTING OF SIDEWALLS AGAINST EARTH IS NOT PERMITTED.
13. LEAN CONCRETE FILL TO BE $f'c = 2000$ PSI. INLET STRUCTURE, LID, STREET CURB AND GUTTER, AND PAVEMENT TO BE $f'c = 4,500$ PSI, MAX W/CM = 0.45 AND AIR ENTRAINED 5% TO 8% $f'c = 28$ DAY COMPRESSIVE STRENGTH REQUIREMENT FOR MIX DESIGN, FIELD ACCEPTANCE.
14. FOR THROUGH STRUCTURES, BENCHES MUST COME TO TOP OF PIPE.
15. NO CORNER PENETRATIONS ON STRUCTURE.
16. SEE COP STANDARD CONSTRUCTION SPECIFICATIONS STORM INLETS SECTION FOR MORE INFORMATION. USE OF THIS DETAIL WITHOUT SPECIFICATIONS SHALL BE CONSIDERED NON-COMPLIANT.
17. SEE SW5.4 FOR REBAR PLACEMENT AT WALL PENETRATION DETAIL.

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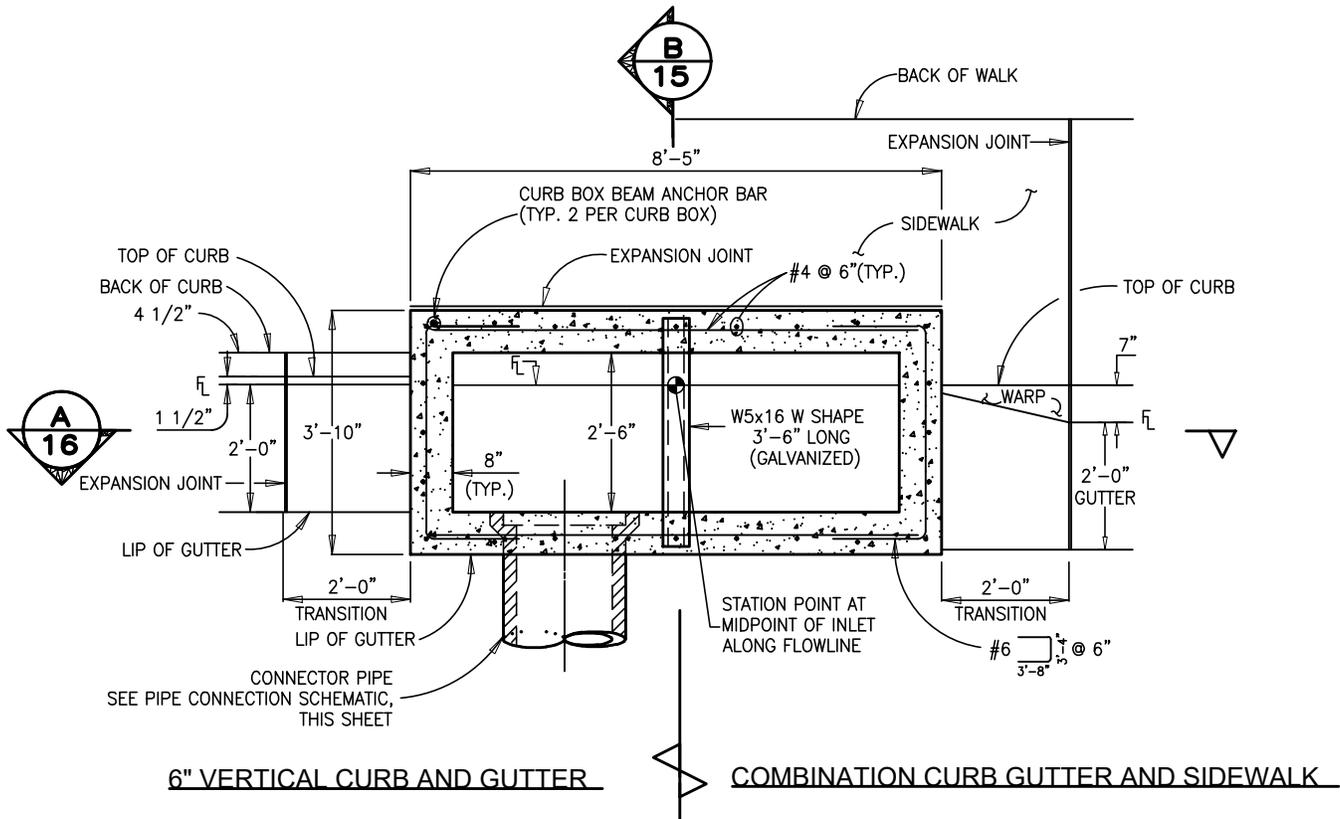


INLET, TYPE 16 (2 OF 6)

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SW5.2

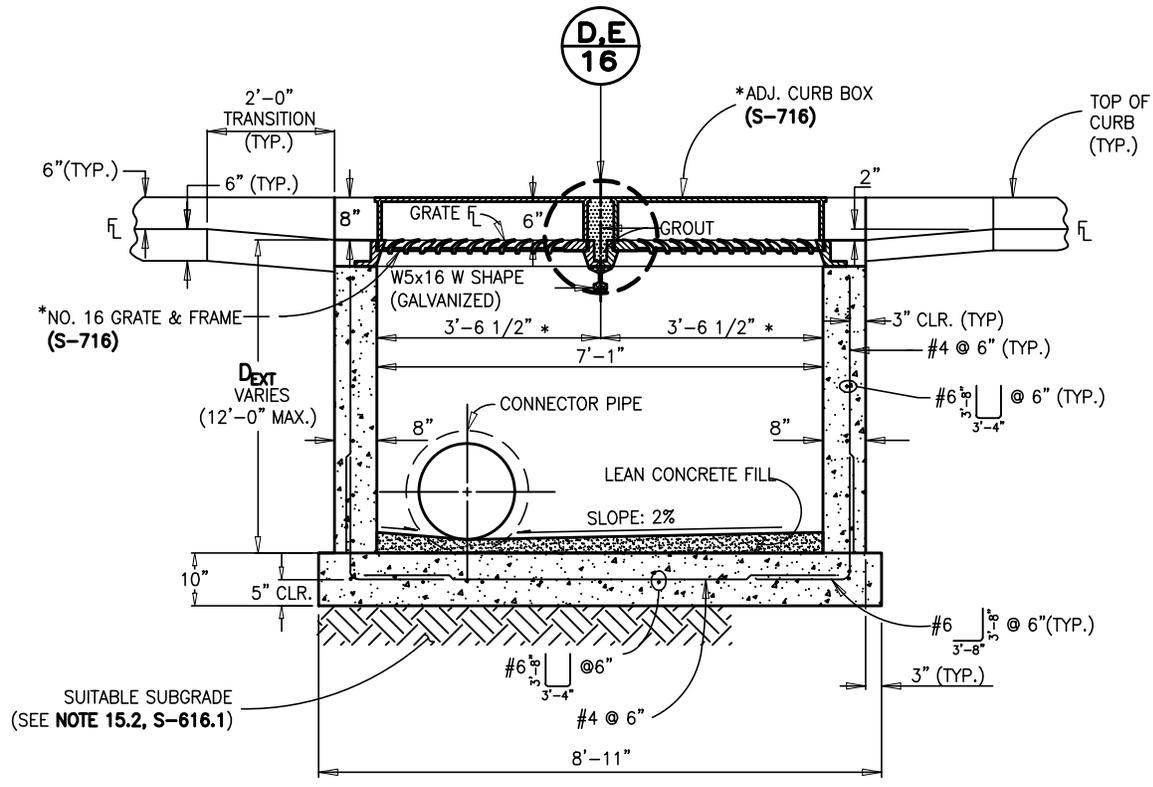
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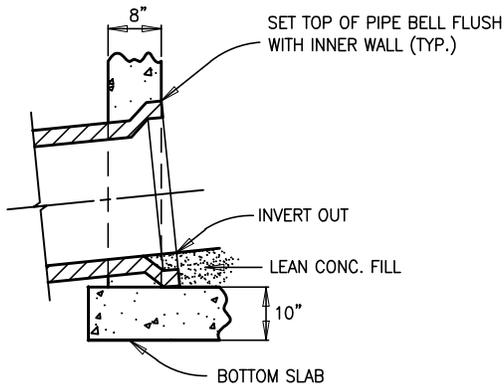
6" VERTICAL CURB AND GUTTER

COMBINATION CURB GUTTER AND SIDEWALK

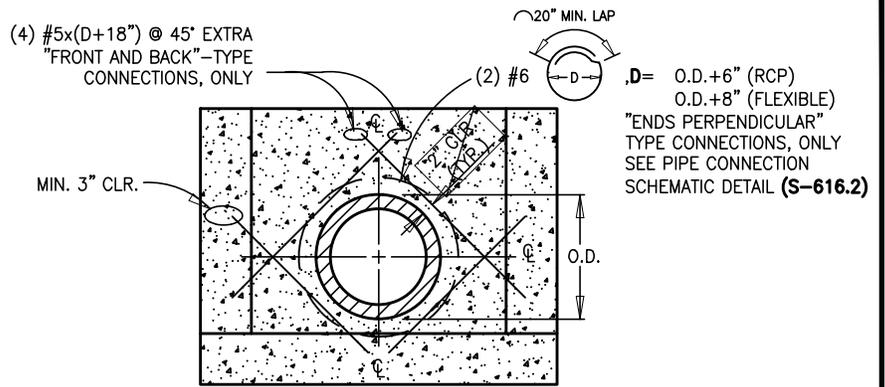
PLAN
NO SCALE



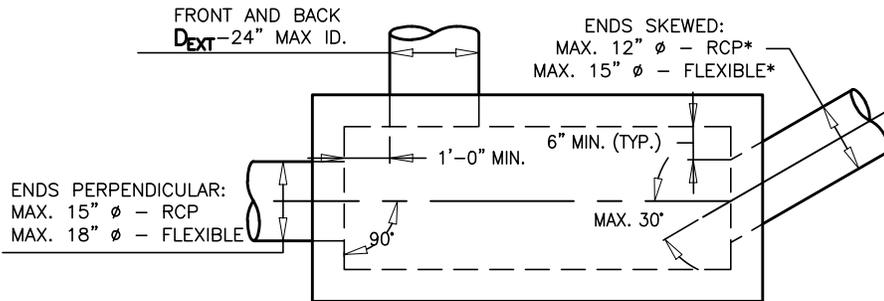
A SECTION
NO SCALE



C DETAIL - CONNECTOR OUTLET
NO SCALE



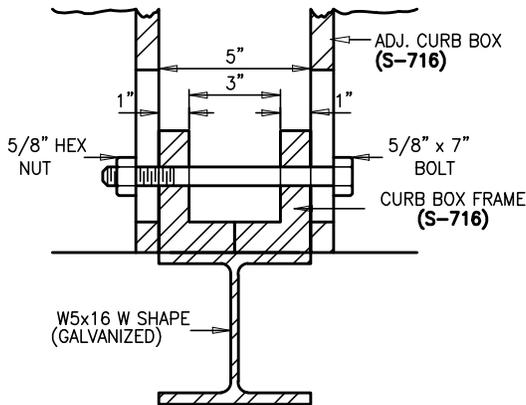
DETAIL - REBAR PLACEMENT AROUND CONNECTOR PIPE
NO SCALE



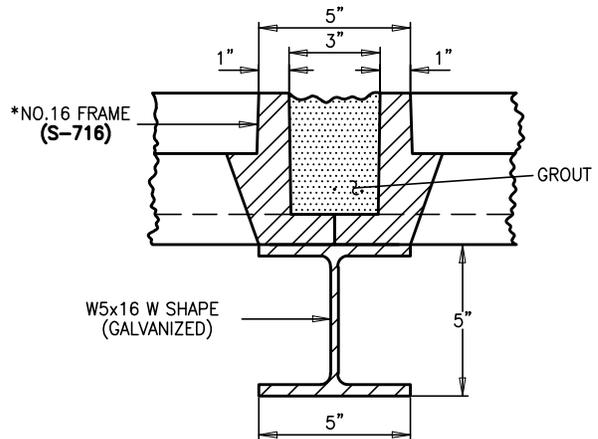
*ANGLED CONNECTIONS REQUIRE CITY APPROVAL.

PIPE CONNECTION SCHEMATIC (NO. 16 INLET)

THIS DIAGRAM IS PROVIDED FOR GENERAL GUIDANCE ONLY. THE DESIGNER IS RESPONSIBLE FOR VERIFYING PROJECT SPECIFIC GEOMETRY.



D DETAIL - PLACEMENT OF ADJ. CURB BOX ON SUPPORT RAIL (TYP.)
NO SCALE

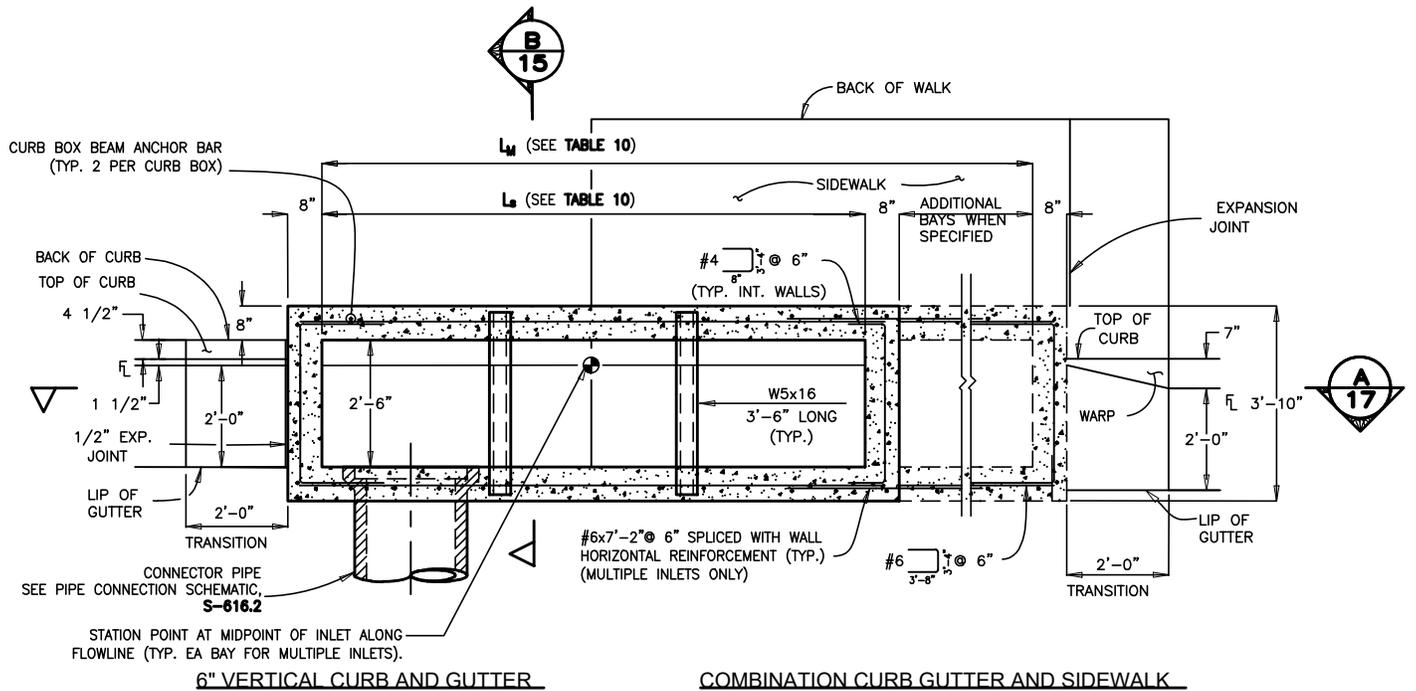


E DETAIL - FRAME PLACEMENT ON SUPPORT RAIL (TYP.)
NO SCALE

DOUBLE NUMBER 16 INLET NOTES:

- 16.1 SEE DETAIL SPECIFICATIONS SECTION 11.05 STORM INLETS FOR MORE INFORMATION. USE OF THIS DETAIL WITHOUT THESE SPECIFICATIONS SHALL BE CONSIDERED NON-COMPLIANT.
- 16.2 SEE GENERAL NOTES ON S-616.1.
- 16.3 EXPANSION JOINT MATERIAL SHALL BE PLACED FULL DEPTH OF THE CURB AND GUTTER, SIDEWALK, CONCRETE PAVEMENT, AS APPLICABLE. THE TOP PORTION OF THE JOINT SHALL BE SEALED WITH SILICONE SEALANT.
- 16.4 SEE S-616.1 FOR REBAR PLACEMENT AT WALL PENETRATION DETAIL.

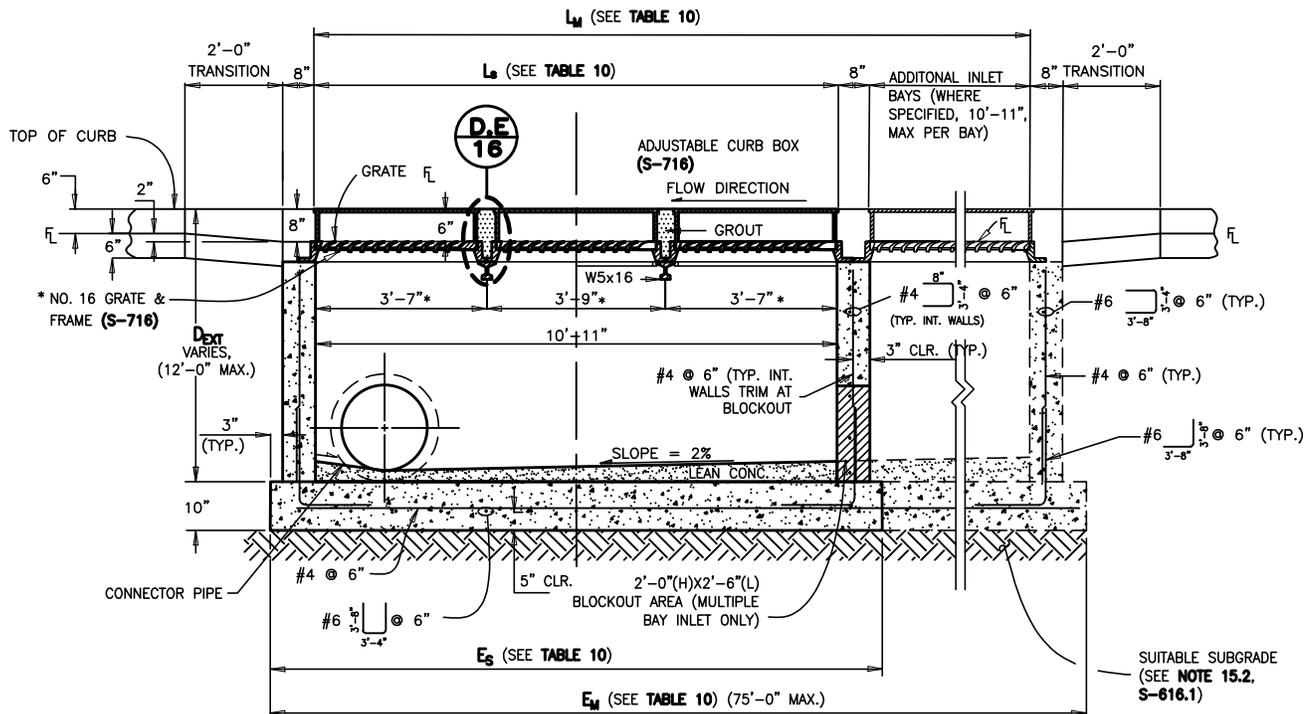
* STANDARD DETAIL S-716 APPLIES TO ALL OF THE GRATE & FRAME GEOMETRIC DIMENSIONS FOR THE DOUBLE NUMBER 16 INLET EXCEPT FOR THE FRAME LENGTH. FRAME LENGTH SHOULD BE MANUFACTURED FOR THE DIMENSIONS CALLED OUT ON THIS SHEET.



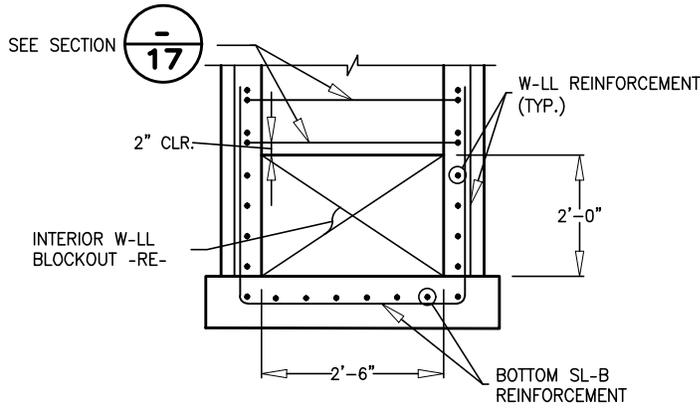
6" VERTICAL CURB AND GUTTER

COMBINATION CURB GUTTER AND SIDEWALK

PLAN
NO SCALE



A SECTION
NO SCALE



DETAIL - TYPICAL INTERIOR WALL BLOCK-OUT
NO SCALE

TRIPLE NUMBER 16 INLET NOTES:

- 17.1 SEE WCPM ST-ND-RD CONSTRUCTION SPECIFICATIONS SECTION 11.05 STORM INLETS FOR MORE INFORMATION. USE OF THIS DETAIL WITHOUT SPECIFICATIONS SHALL BE CONSIDERED NON-COMPLIANT.
- 17.2 SEE GENERAL NOTES ON **S-616.1**
- 17.3 EXPANSION JOINT MATERIAL SHALL BE PLACED FULL DEPTH OF THE CURB AND GUTTER, SIDEWALK, CONCRETE PAVEMENT, ASPHALT. THE TOP PORTION OF THE JOINT SHALL BE SEALED WITH SILICONE SEALANT.
- 17.4 SEE **S-616.2** FOR REBAR PLACEMENT ROUND CONNECTOR PIPE.

* ST-ND-RD DETAIL **S-716** APPLIES TO ALL OF THE GRATE & FRAME GEOMETRIC DIMENSIONS FOR THE TRIPLE NUMBER 16 INLET EXCEPT FOR THE FRAME LENGTH. FRAME LENGTH SHOULD BE MANUFACTURED FOR THE DIMENSIONS CALLED OUT ON THIS SHEET.

TABLE 10. NO. 16 TOTAL INLET LENGTH		
INLET CONFIGURATION	L_1 OR L_M INLET LENGTH	E_1 OR E_M TOT-L BOTTOM SL-B LENGTH
TRIPLE NO. 16	10'-11"	12'-9"
NO. 16 3-3-2 (EXAMPLE CONFIGURATION)	10'-11", 10'-11", 7'-1"	32'-1"
NO. 16 --- (CONFIGURATION TEMPLATE)	L_1, L_2, L_3	$=3'+8"+L_1+8"+L_2+8"+L_3+8"+3"$

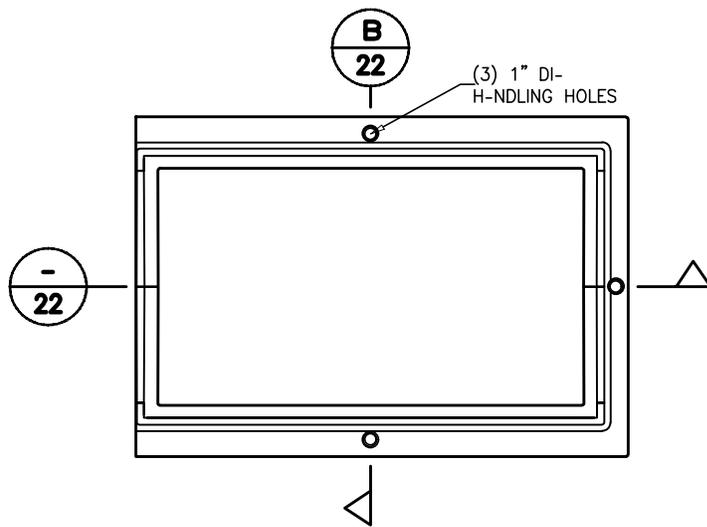
□ M-X. BOTTOM SL-B LENGTH = 75'-0"

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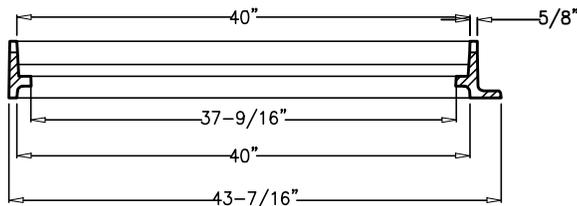


INLET, TYPE 16 (6 OF 6)
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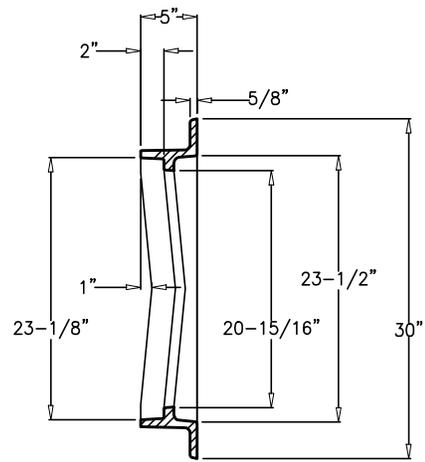
SW5.6
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APPROVED BY: JH



FRAME TOP VIEW

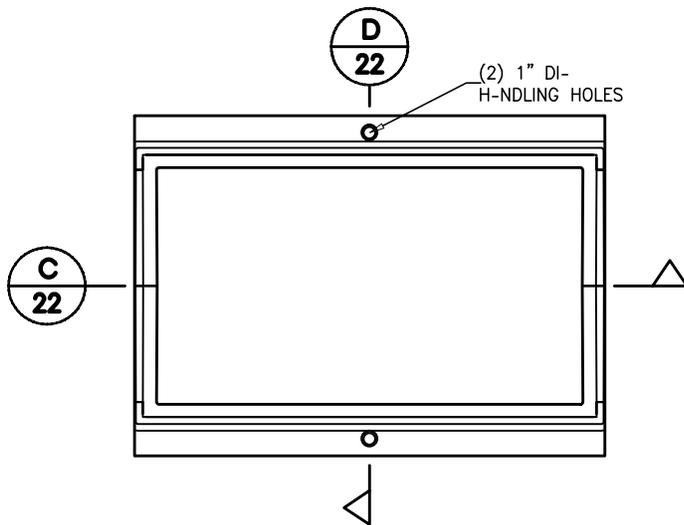


- FRAME SECTION

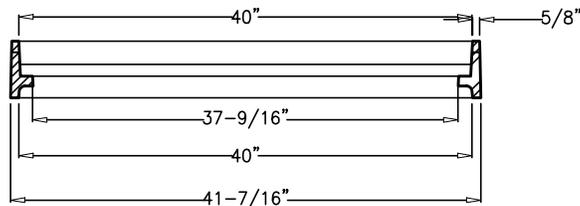


B FRAME SECTION

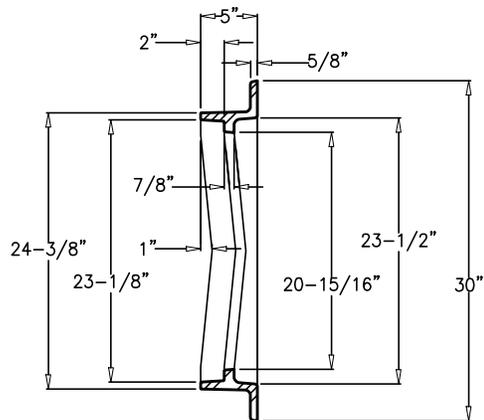
NO. 16 INLET FRAME - RIGHT OR LEFT
NO SCALE



FRAME TOP VIEW



C FRAME SECTION



D FRAME SECTION

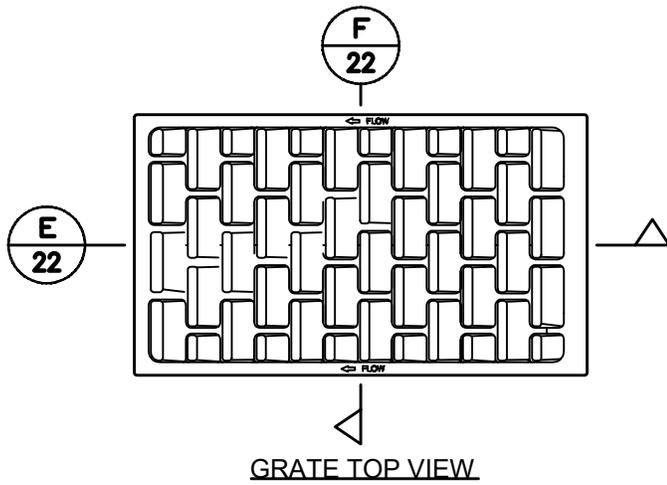
NO. 16 INLET FRAME - CENTER
NO SCALE

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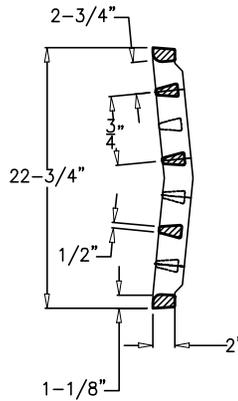


GRATE & FRAME -
ADJUSTABLE CURB BOX (1 OF 2)
PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
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(719) 553-2295 PHONE

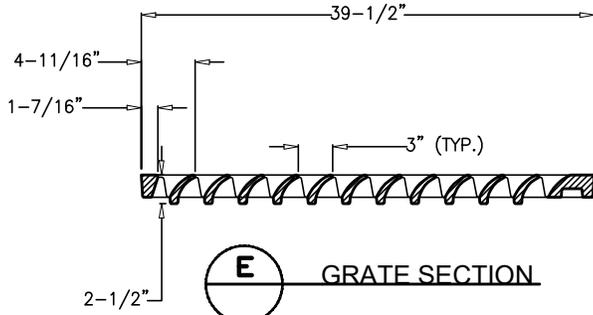
SW6.1
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GRATE TOP VIEW



GRATE SECTION

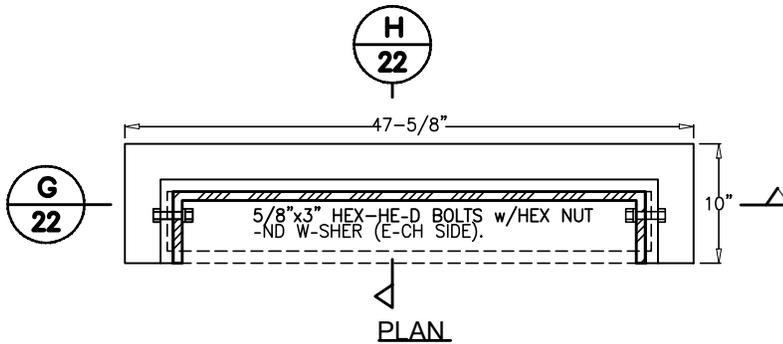


GRATE SECTION

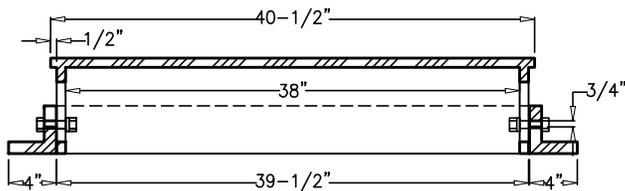
NO. 16 INLET GRATE
NO SCALE

GRATE & FRAME NOTES:

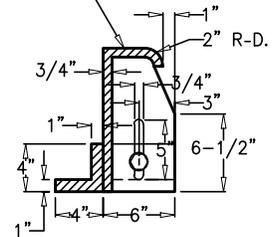
1. C-ST IRON SH-LL CONFORM TO -STM -48 (CL-SS 35B, MINIMUM).
2. C-STINGS SH-LL COMPLY WITH FEDER-L SPECIFIC-TION RR-F-621D FOR C-STING PROOF LO-DING (HE-VY DUTY).
3. -LL C-STINGS REQUIRE INDIVIDU-L -PPROV-L/CERTIFIC-TION FROM THIS DIVISION.
4. C-STINGS SH-LL NOT BE DIPPED OR P-INTED PRIOR TO FIN-L INSPECTION, ONCE INDIVIDU-L C-STINGS -RE CHECKED, -ND -PPROVED BY THE DIVISION FOR PROJECT US-GE, THEY SH-LL BE CO-TED WITH -N -PPROVED M-TERI-L.



PLAN

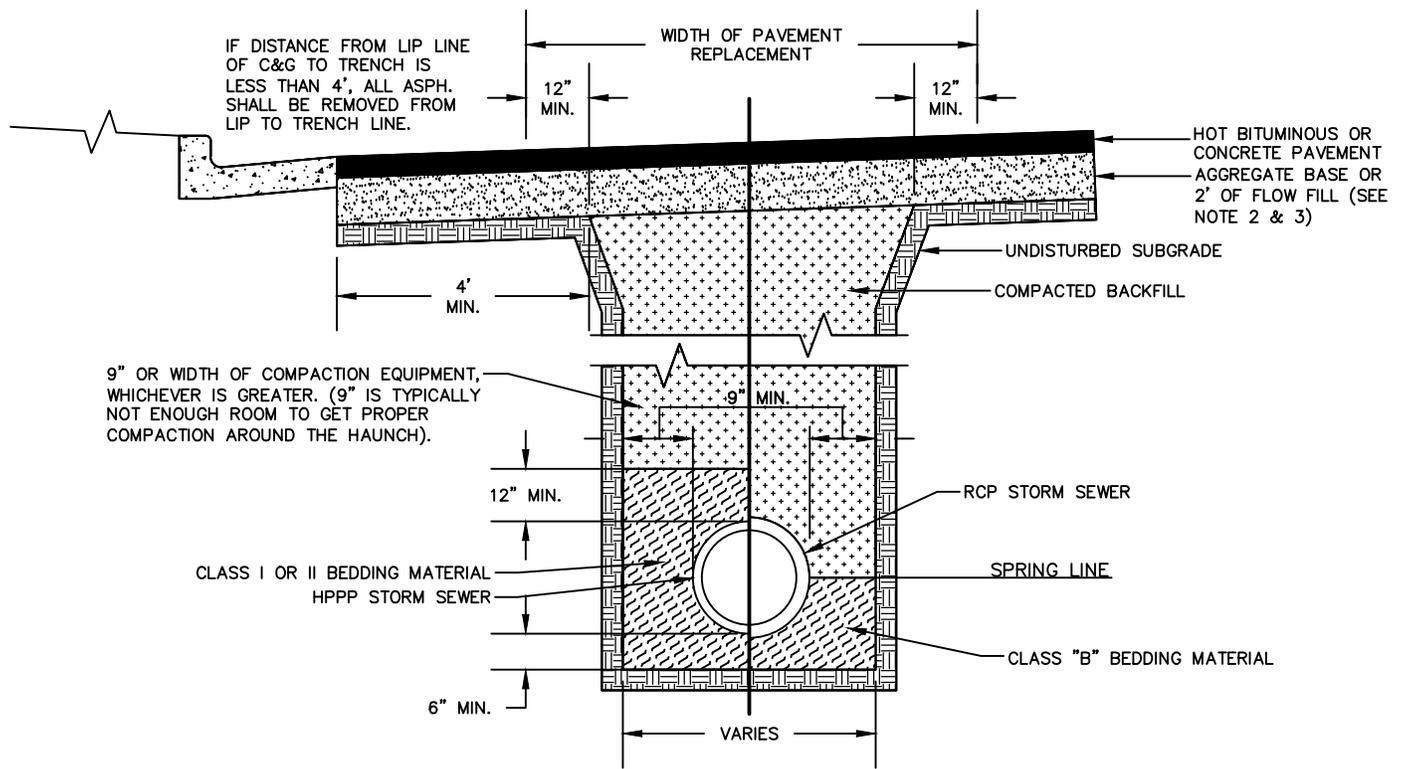


SECTION



SECTION

ADJUSTABLE CURB BOX
(MINIMUM CURB OPENING AREA = 150 in²)
NO SCALE



TRENCH DETAIL FOR STORM SEWER
SCALE 1" = 3'-0"

1. ALL TRENCHES SHALL BE ADEQUATELY SUPPORTED AND THE SAFETY OF WORKERS PROVIDED FOR AS REQUIRED BY THE MOST RECENT OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION".
2. NEW STREETS SHALL COMPLY WITH THE CITY OF PUEBLO'S PAVEMENT DESIGN CRITERIA FOR PAVEMENT AND AGGREGATE THICKNESS FOR EACH ROADWAY CLASSIFICATION (TABLE 3-1).
3. EXISTING STREETS SHALL COMPLY THE CITY OF PUEBLO'S PAVEMENT DESIGN CRITERIA FOR PAVEMENT THICKNESS (TABLE 3-1) OR BE EQUAL TO EXISTING PAVEMENT THICKNESS WHICH EVER IS GREATER. 2 FOOT OF FLOWABLE FILL SHALL BE USED IN LIEU OF AGGREGATE BASE.
4. ON ALL STORM SEWER INSTALLATION, COMPACTION TESTS SHALL BE MADE BY AN APPROVED INDEPENDENT TESTING LABORATORY AND SHALL IDENTIFY THE LOCATION AND DEPTH OF THE TEST, THE DATE OF THE TEST, THE MAXIMUM STANDARD PROCTOR DENSITY AND OPTIMUM MOISTURE CONTENT OF THE SOIL AND GIVE THE PERCENT OF COMPACTION AND MOISTURE CONTENT OF THE BACKFILL MATERIAL AT THE TEST LOCATION. COMPACTION TESTS SHALL BE MADE AT A DEPTH OF THREE FEET (3') ABOVE THE TOP OF THE PIPE AND AT TWO FOOT INTERVALS IN DEPTH, UP TO AND INCLUDING THE SURFACE. TESTING SHALL BE DONE AT A MINIMUM OF ONE LOCATION FOR EVERY 250 FEET OF MAIN LINE TRENCH OR FRACTION THEREOF AND AT EVERY MANHOLE OR SIMILAR STRUCTURE. AN ADDITIONAL COMPACTION TEST IS REQUIRED FOR EACH INLET AND LATERAL AND MAY BE TAKEN ALONG THE PIPE OR AR THE INLET AT THE DISCRETION OF THE CITY. SEE 12.3.12 FOR FURTHER GUIDANCE & REQUIREMENTS.

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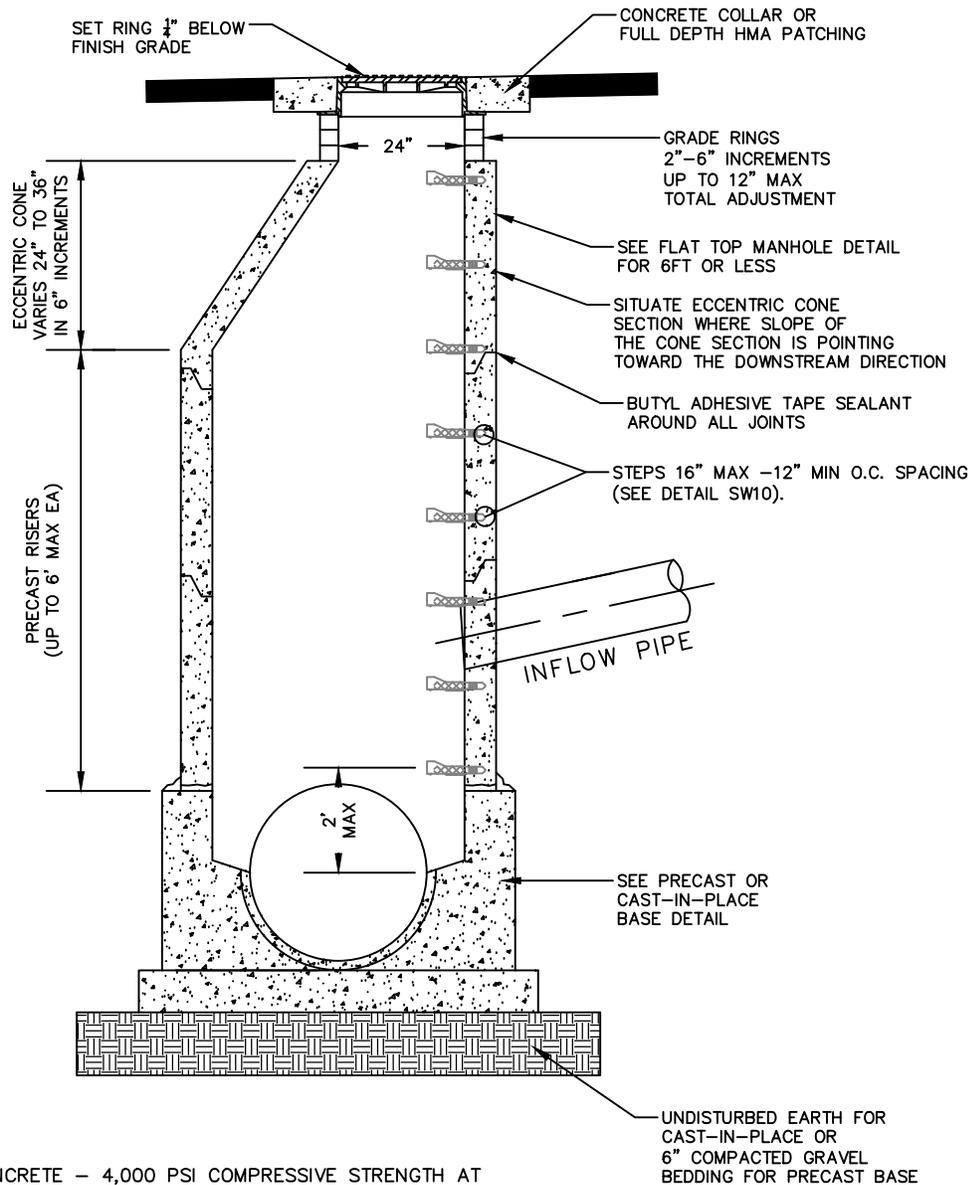


STORM SEWER TRENCH

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

SW7

DRAWN BY: NLS
CHECKED BY: JS
APPROVED BY: JH



NOTES:

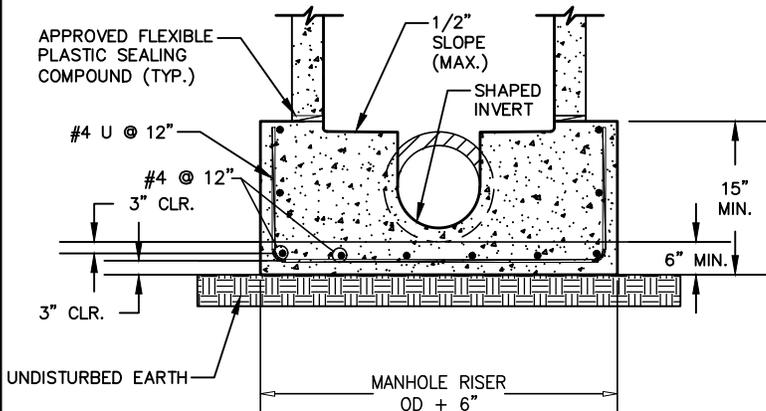
- DESIGN CRITERIA: CONCRETE - 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS (TYPE II-V CEMENT).
- PROVIDE ECCENTRIC CONES FOR ALL MANHOLES GREATER THAN SIX FEET (6') DEEP, AND FLAT TOPS FOR MANHOLES SIX FEET (6') OR LESS.
- FOR PIPE INVERT ELEVATIONS SEE PLAN AND PROFILE SHEETS.
- STEPS SHALL BE REQUIRED WHEN THE MANHOLE DEPTH EXCEEDS 3 FT 6 IN. SEE CITY OF PUEBLO MANHOLE/INLET STEP DETAIL FOR STEP SPECIFICATIONS.
- MANHOLE STEPS SHALL NOT BE INSTALLED OVER THE FLOW CHANNEL.
- FOR DEPTHS GREATER THAN 20' (RIM TO INVERT) SHOP DRAWINGS, CALCULATIONS OF WALLS, TOP AND BOTTOM SLABS SHALL BE SUBMITTED.
- DESIGN ENGINEER OR PROJECT ENGINEER MAY INCREASE MANHOLE SIZE FOR SPECIAL DESIGN CONSIDERATIONS.
- ALL JOINTS IN THE MANHOLE BARREL, CONE, GRADE ADJUSTMENT RINGS, AND FLAT TOP SECTIONS SHALL BE SEALED WITH A PREFORMED FLEXIBLE PLASTIC SEALING COMPOUND CONFORMING TO FEDERAL SPECIFICATION SS-S-00210 (GSA-FS6).
- ALL PIPE PENETRATIONS SHALL BE AN APPROVED FLEXIBLE CONNECTION, MECHANICAL SEAL, WATER STOP, OR NON-SHRINK GROUT TO REDUCE INFILTRATION AND EXFILTRATION. WHEN GROUTING IS NECESSARY AT A WATER STOP CONNECTION, NON-SHRINK GROUT SHALL BE USED.

STORM DRAIN DIAMETER (INCHES)	MANHOLE DIAMTER (FEET)
15 TO 18	4
>18 TO <42	5
42 TO 54	6
LARGER THAN 54	APPROPRIATE MANHOLE SIZE FROM CDOT STANDARD PLAN NO. M-604-20

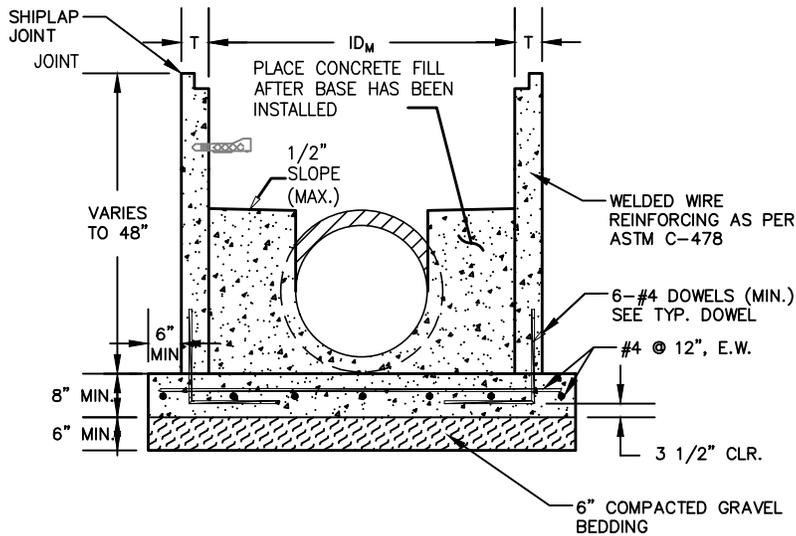
MANHOLE DROP REQUIREMENT	
HORIZONTAL DEFLECTION ANGLE OF SEWER PIPE AT MANHOLE	MINIMUM DROP (FT)
0°	0.10
0° & 45°	0.20
45° TO 90°	0.30

CAST-IN-PLACE MANHOLE BASE NOTES:

1. GROUTED FLOW CHANNELS AND INVERTS MAY BE FORMED BY SHAPING WITH LEAN CONCRETE ($f'_c=2,000$ PSI MIN.), ALL OTHER CONCRETE SHALL BE MIN $f'_c=4,000$ PSI.
2. REINFORCING IS REQUIRED FOR ALL MANHOLE BASES.
3. SLOPE MANHOLE BENCH $1/2"$ MAXIMUM TOWARD FLOW CHANNEL.
4. ALL MANHOLES TO BE PLACED ON SUITABLE SUBGRADE MATERIAL. IF SUBGRADE CONDITIONS WARRANT, UNSUITABLE FOUNDATION MATERIAL SHALL BE OVEREXCAVATED, & SELECT SUBGRADE WILL BE PLACED.
5. CONCRETE TO CONCRETE DONE WITHOUT THE PLASTIC SEALING COMPOUND FOR STORM SEWER WILL BE AT THE DISCRETION OF THE CITY.
6. ALL PRECAST RISER SECTIONS, CONES, GRADE RINGS, ETC. SHALL CONFORM TO THE LATEST REVISION OF ASTM C-478, STANDARD SPECIFICATIONS FOR CIRCULAR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS.
7. NO MODIFICATIONS TO A CAST-IN-PLACE MANHOLE WILL BE ACCEPTED ONCE CAST.



CAST-IN-PLACE MANHOLE BASE
NO SCALE



PRECAST MANHOLE BASE NOTES:

1. THE BASE SLAB SHALL BE POURED MONOLITHICALLY WITH BOTTOM RISER SECTION.
2. PRECAST MANHOLE BASES SHALL FIT THE CONDITIONS AND LOCATIONS FOR WHICH THEY ARE INTENDED WITHOUT ANY FIELD MODIFICATIONS. ANY MANHOLE BASE WHICH REQUIRES FIELD CUTTING OR MODIFICATION IN ORDER TO FIT THE LOCATIONS INTENDED SHALL BE REJECTED BY THE CITY AND REMOVED AT NO COST TO THE CITY.
3. PRECAST MANHOLES CANNOT BE SHIPPED PRIOR TO 5 DAYS POST CASTING, AND CANNOT BE INSTALLED PRIOR TO 7 DAYS POST CASTING.

PRECAST MANHOLE BASE
NO SCALE

09/03/2024
01/01/2023
REVISIONS

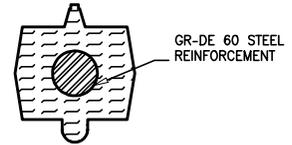
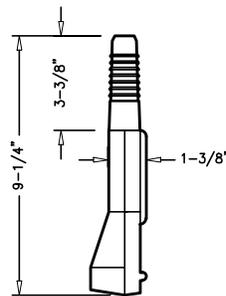
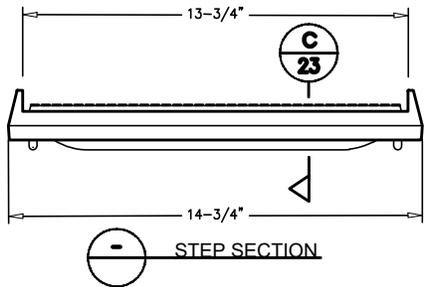
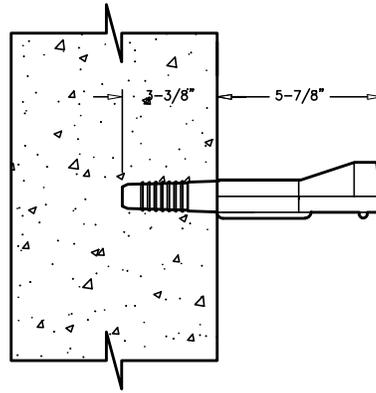
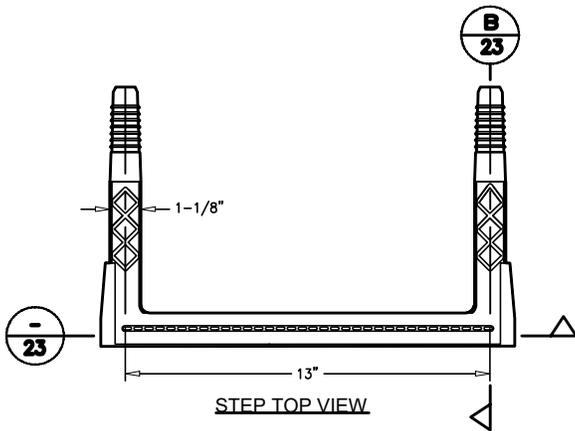


STORM MANHOLE BASES

PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
211 EAST "D" ST. PUEBLO, CO 81003
(719) 553-2295 PHONE

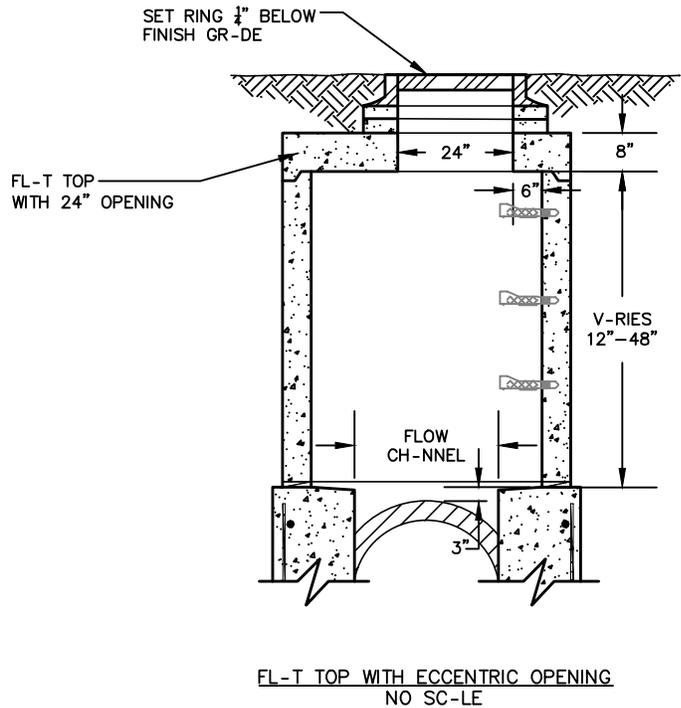
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DRAWN BY: NLS
CHECKED BY: JS
APPROVED BY: JH

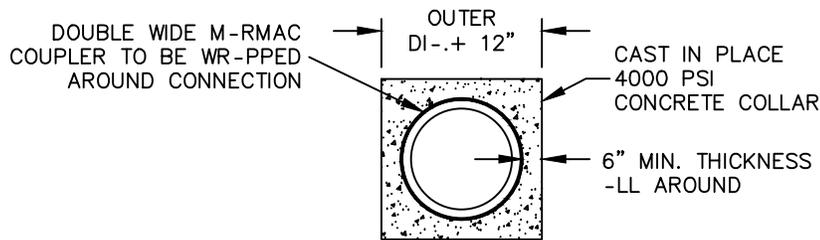
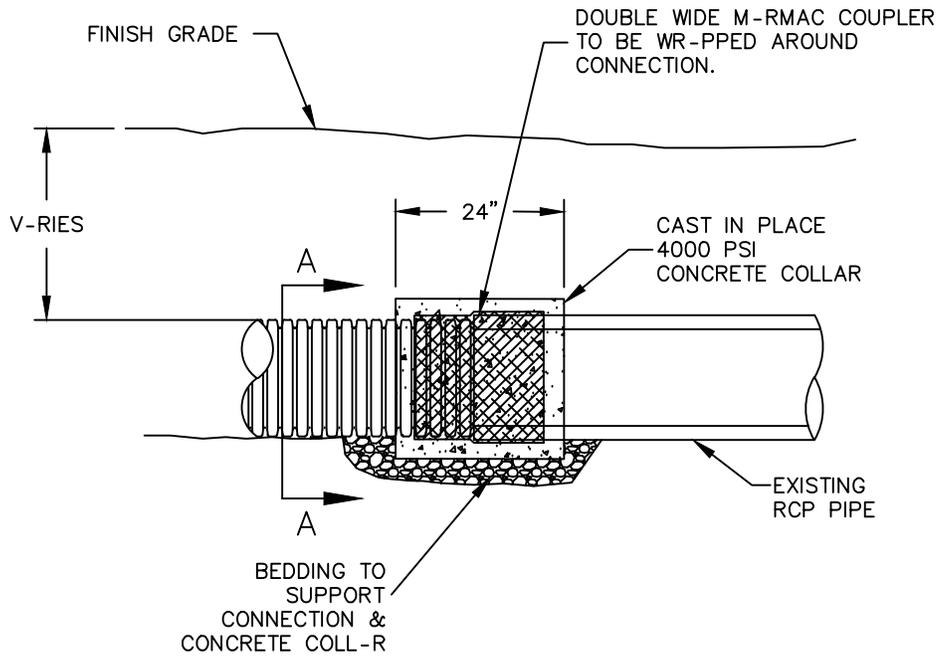
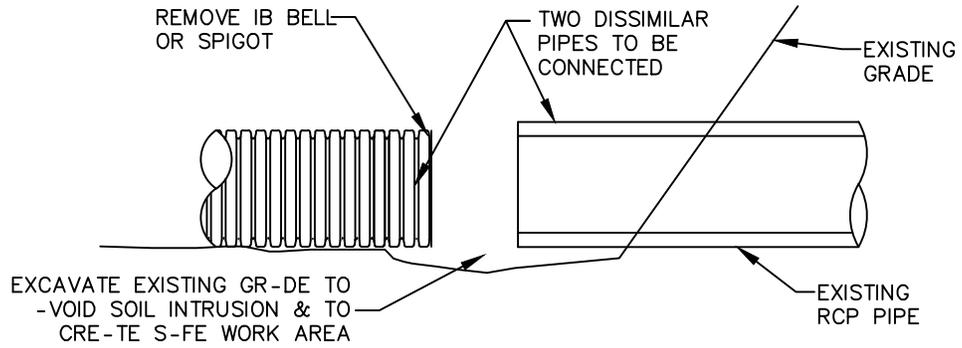


NOTES:

1. -STM SPECIFIC-TIONS:
 - 1.1. -STM C-478 (M-NHOLE STEPS -ND L-DDERS)
 - 1.2. -STM --615 GR-DE 60 (STEEL REB-R)
 - 1.3. -STM 4101 (POLYPROPYLENE)
2. STEPS SH-LL BE INST-LLED BY THE "PRESS-FIT" METHOD UTILIZING - SPECI-LLY T-PERED PIN TO FORM THE INSERT HOLE -S SHOWN. FOLLOWING M-NUF-CTURER'S RECOMMENDED PROCEDURE -ND SH-LL NOT BE GROUTED IN PL-CE.
3. INST-LLED STEPS SH-LL BE C-P-BLE OF WITHST-NDING - PULL OUT FORCE OF 2500 LB. PER LEG FOR - MINIMUM PERIOD OF TWO MINUTES.
4. PINS MUST BE SMOOTH -ND CONTINUOUSLY T-PERED. W.M.D. INST-LL-TIONS REQUIRE - M-TCHED COMBIN-TION OF - T-PERED INSERT PIN -ND M-NHOLE STEP, -S RECOMMENDED OR REQUIRE BY SPECIFIC M-NUF-CTURE OF THE STEP TO BE USED.
5. THIS STEP C-N -LSO BE USED IN TOE POCKET INST-LL-TIONS PROVIDED 5" TOE CLE-R-NCE IS -LLOWED. M-NHOLE STEPS SH-LL NOT BE INST-LLED OVER THE FLOW CH-NNEL. THEY SH-LL BE PL-CED 12" MINIMUM OR 16" M-XIMUM IN STR-IGHT VERTIC-L -LIGNMENT WITH THE BOTTOM STEP 8" -BOVE THE BENCH MINIMUM.



* STORM M-NHOLES ONLY. NO STEPS IN S-NIT-RY SEWER M-NHOLES.



SECTION "A-A"

DISSIMILAR PIPE CONNECTION DETAIL

09/03/2024
01/01/2023
REVISIONS



STORM PIPE DISSIMILAR CONNECTION
 PUBLIC WORKS DEPARTMENT - ENGINEERING DIVISION
 211 EAST "D" ST. PUEBLO, CO 81003
 (719) 553-2295 PHONE

SW11
 DRAWN BY: NLS
 CHECKED BY: JS
 APPROVED BY: JH