**General Notes:**

1. All work shall be done in accordance with current City of Colorado Springs Engineering Division (the City) Standard Specifications.
2. The contractor shall obtain all required permits. City permits contractors shall use the ACCEL A on-line permit system. Once City permits are approved and paid, then appropriate scheduling and notifications shall be in ACCEL A.
3. Curb face assembly shall be painted safety yellow. One coat of shop primer and two coats of industrial enamel paint shall be used.
4. Concrete used for inlets and connections shall be a City-approved structural concrete mix design.
5. A minimum of 6-inches thick of granular bedding material shall be provided below all inlets.
6. Reinforcing bars shall be ASTM A615, Grade 60 deformed steel marked with bar designation, grade and mill marking.
7. Reinforcing shall have a minimum 2-inch clearance, except as noted.
8. Pipe entries into inlets are variable; the dimensions and reinforcing details shown are typical.
9. Inlet floors shall be finished with a City-approved concrete mix to a smooth surface that slopes towards the outlet (2% min. for inlets). Floor slope shall either be poured monolithic with the base or after floor and pipe openings are constructed. Epoxy between pipe and invert if there is a cold joint.
10. Curb inlet depth and length may vary. Curb inlet length shall be 5-feet, 10-feet, or 15-feet; not to exceed 15-feet unless approved by Stormwater Enterprises. Where curb inlets with lengths greater than 10-feet are approved, provide maintenance access at both ends of the inlet.
11. Curb inlet top deck slab shall be sloped toward the street (0.5% min., 2% max.).
12. The opening and top deck slab of curb inlets shall match the running slope of the street grade and/or the designed curb line profile at each location. Curb inlets shall not create unnecessary dips or bumps in the roadway cross section which adversely affect drivability of the pavement.
13. Stub-outs shall extend a minimum of 2-foot beyond outside wall surface of inlets and shall be plugged as approved by the Inspector.
14. No formwork shall remain inside inlets after completion.
15. Concrete walls shall be formed on both sides. Casting of sidewalks against earth is not permitted.
16. Exposed concrete corners shall be chamfered 3/4-inch. Curb and gutter corners shall be finished to match the existing curb and gutter beyond the transition for curb inlets.
17. A minimum of one vertical support bar is required. Curb inlets greater than 5-feet wide shall have support bars installed at maximum 3-foot intervals evenly spaced across the opening.
18. Grates for area inlets shall be installed during construction of the box, with the grate bolted to the frame.
19. Steps shall be installed for inlets with internal height greater than 30-inches at 16-inches spacing with the top step located 6-inches below the inside cover. Steps shall conform to AASHTO M-199.
20. Outer wall of pipe shall be a minimum of 6-inches from interior side walls and top of inlets.

21. All reinforcement dimensions are on-center (O.C.) unless otherwise noted.
22. Precast inlets may be used upon annual City acceptance of shop drawings and concrete mix design. Contractor shall provide proof of acceptance prior to installation.
23. Precast base slab shall be poured monolithically with bottom riser section.
24. Precast base slab shall fit the conditions and locations for which they are intended without any field modifications. Bases which require field cutting or modification in order to fit the location intended will be rejected by the Inspector and removed and replaced by the contractor at no additional cost.
25. Storm sewers shall have tracer wire installed per the tracer wire detail prior to acceptance.
26. All inlets shall be channelized.
27. Inlets greater than 10-feet in depth shall be designed by a structural engineer.
28. A 4-inch diameter stainless steel medallion with "NO DUMPING DRAINS TO CREEK" or similar message shall be firmly attached to the top of the inlet surface per a permanent fastener. The medallion will have a fish symbol and blue color background. Alternately, this message may be cast with 3-inch height letters into the top of the inlet's concrete surface or surrounding concrete apron. The 'No Dumping' message shall be eliminated for inlets located within the shoulder of controlled access freeways when specified in the plans.

<table>
<thead>
<tr>
<th>Inlet Type</th>
<th>Maximum Pipe Size (I.D.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Straight</td>
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<tr>
<td></td>
<td>Side</td>
</tr>
<tr>
<td>Curb Inlet Type 1</td>
<td>24“</td>
</tr>
<tr>
<td>Curb Inlet Type 2</td>
<td>15“</td>
</tr>
<tr>
<td>Curb Inlet Type 3 (Single)</td>
<td>18“</td>
</tr>
<tr>
<td>Curb Inlet Type 3 (Double)</td>
<td>18“</td>
</tr>
<tr>
<td>Curb Inlet Type 4</td>
<td>15“</td>
</tr>
<tr>
<td>Area Inlet Type 1 (Single)</td>
<td>21“</td>
</tr>
<tr>
<td>Area Inlet Type 1 (Double)</td>
<td>21“</td>
</tr>
<tr>
<td>Area Inlet Type 2</td>
<td>30“</td>
</tr>
</tbody>
</table>

Alternate sizing and angles are listed in the Drainage Criteria Manual.
STORM DRAIN
TYPICAL INLET CHANNELIZATION

PLAN VIEW
(SQUARE BASE)

PLAN VIEW
PIPE THROUGH
(SQUARE BASE)

PLAN VIEW
THROUGH PIPE ONE LATERAL
(SQUARE BASE)

PLAN VIEW
ANGLED LATERALS
(SQUARE BASE)

PLAN VIEW
SHARP ANGLE
(SQUARE BASE)

PRECAST SLAB BASE
(PROFILE)

INVERT ELEVATIONS
SHOWN IN PROFILE

*IF OUTLET PIPE IS LARGER
MATCH PIPE CROWNS

FLOW

CONCRETE

0.2*

FLOW
NOTES:
1. DECORATIVE LIDS MAY BE USED WITH PRE-APPROVAL.
2. DECORATIVE LIDS SHALL NOT BE USED WHERE LIDS WILL BE IN THE SIDEWALK.
INLET TYPE 1
OPENING DETAIL

ALTERNATE ANCHOR

INLET TYPE 2
OPENING DETAIL

NOTE: PLACE ENTIRE ASSEMBLY PRIOR TO POURING CONCRETE
STORM DRAIN CURB INLET TYPE 2

PLAN VIEW

SECTION A-A'

- Standard reversible frame and cover with 5" ring
- #6 @ 2 1/2"
- #5 @ 5 1/2"
- #4 @ 11"
- 3" CLR.
- 4" transition gutter & curb face
- Flowline gutter
- Face of curb
- 1 1/4" rod @ 30" see channel layout detail

SECTION B-B'

- #6 @ 2 1/2", 2 layers (O.D.=2-9", stagger lap)
- #6 @ 8"
- #4 @ 9" in wall
- 3" CLR.
- 3 1/2" each way

- 6" wall (typ.)
- 3" CLR.
- 3" CLR.
- #4 @ 9"
- #4 @ 11"
- #4 @ 12"
- #4 @ 9"
- Invert elev. (typ.)
- PAVEMENT
- 2 1/2"
- 3"
- 8"
- 4"-4"
- 1-6"

- 4"
- 8"
- 2"
- 2"
- 4" min.

- Drop box option acceptable for inlet lengths of 10 or 15'
- Minimum concrete invert depth shall equal pipe wall thickness
- #4 @ 6" each way
- Concrete fill
- 3" CLR
- Pipe connection per detail

- Opening
- Opening
- Opening

- 9 1/2" slope min.
- 3" CLR.
- 3"
- 4"-4"
- 2"
- 2"

DRAFT

COLORADO SPRINGS

APPROVED:

CITY ENGINEER:

ISSUED: 6/19/20
REVISED:
DRAWING NO. D-9C
CHANNEL LAYOUT DETAILS

FOR 5' INLET

(1) 1 1/2" HOLE

(2) #4

FOR 10' INLET

(3) 1 1/2" HOLES

FOR 15' INLET

(5) 1 1/2" HOLES

SECTION AT HOLE
(TYPICAL)

APPLICATION DIAGRAM

COLORADO SPRINGS

STORM DRAIN
CURB INLET TYPE 2

APPROVED:
CITY ENGINEER

ISSUED: 6/19/20
REvised:
DRAWING NO.: D-9H
NOTE:
FOR INLETS GREATER THAN 6-FT IN DEPTH, SHOP DRAWINGS AND DESIGN ANALYSIS SHALL BE SUBMITTED FOR APPROVAL.

T = THROAT OPENING
*6" FOR 6" VERT. CURB & GUTTER
*8" FOR 8" VERT. CURB & GUTTER
DROP FROM GUTTER FLOWLINE ELEVATION TO GRATE FLOWLINE ELEVATION (TRANSITION) IS 2"
NOTE:
FOR INLETS GREATER THAN 6-FT IN DEPTH, SHOP DRAWINGS AND DESIGN ANALYSIS SHALL BE SUBMITTED FOR APPROVAL.

T = THROAT OPENING
*6" FOR 6" VERT. CURB & GUTTER
*8" FOR 8" VERT. CURB & GUTTER
DROP FROM GUTTER FLOWLINE ELEVATION TO GRATE
FLOWLINE ELEVATION (TRANSITION) IS 2"

SECTION B-B'

STORM DRAIN
CURB INLET TYPE 3 DOUBLE

COLORADO SPRINGS

APPROVED:

CITY ENGINEER

ISSUED:

REvised:

DRAWING NO.
D-92
SECTION A-A'

NOTES:
1. MAINTAIN CONSISTENT SLOPE ALONG UP OF GUTTER LINE.
2. CURB INLET TYPE 4 MAY ONLY BE USED FOR RETROFIT (OR AS APPROVED BY THE CITY).
3. REFER TO CURB INLET TYPE 1 SECTION B-B' FOR DETAIL OF GUTTER FLOWLINE TRANSITION AND OUTLET PIPE REINFORCING.

PLAN VIEW

STORM DRAIN CURB INLET TYPE 4 (RETROFIT ONLY)

CONSTRUCT SQUARED OFF RETURN APRON WHERE CROSS PANS ARE USED

DRAFT
DETAIL A
BOLT SLOT AT CORNER (TYP.)

SECTION A-A'

SECTION B-B'

DETAIL B

GRATE PLAN

MULTIPLE GRATE WITH FRAME PLAN

STORM DRAIN AREA INLET TYPE 1 FRAME AND GRATE

NOTES:
1. FREE OPEN AREA: 190–SQUARE INCHES/GRATE
2. MATERIAL: CAST IRON ASTM A–48 CLASS 35B.
3. FINISH: GALVANIZED (HOT DIP)
4. WEIGHT: 170–LBS. EACH; FRAME 29–LBS. EACH

CITY ENGINEER

ISSUED: 6/19/20
REVISED:
DRAWING NO. D–90
STORM DRAIN
AREA INLET TYPE 1
SINGLE

SECTION B-B'

NOTES:
**TO FACILITATE REMOVAL OF THE GRATE,
PLACE PLYWOOD (3" x \( \frac{3}{8} \)" x 31\( \frac{3}{4} \)) ALONG
EDGE OF THE GRATE AS SHOWN.

GRATE SHALL BE INSTALLED DURING CONSTRUCTION OF THE BOX
WITH THE VANE GRATE BOLTED IN PLACE TO THE FRAME.
**STORM DRAIN AREA INLET TYPE 1 DOUBLE**

**SECTION A-A’**

- **PLAN VIEW**
  - #4 @ 12” (Typ.) in each wall
  - 6’ Frame
  - 8” (Typ.)
  - 12” Lap (Typ.)
  - 3” CLR
  - Invert Elevation (Typ.)
  - Hoop Rebar (2) #5 around pipe penetration
  - 6” Pipe
  - Concrete Fill

**SECTION B-B’**

- **Pipe Connection Per Detail**
  - (3) #5 x 3/4
  - 6”
  - (4) #5 x 1/2
  - 10”
  - 9 1/4”
  - 4”

- **Frame & Grate**
  - #4 @ 12”
  - #4 @ 11”
  - Height varies 4’ Min.
  - 11”-6” Max.

- **NOTES:**
  - **To Facilitate Removal of the Grate,**
    - Place plywood (3” x 4” x 31/32”) along edge of the grate as shown.

- **Grate shall be installed during construction of the box with the vane grate bolted in place to the frame.**

**COLORADO SPRINGS**

**STORM DRAIN AREA INLET TYPE 1**

**DRAWING NO. D-90**

**APPROVED:**

**CITY ENGINEER:**

**ISSUED:**

**REVISION:**

**DRAWING NO. D-90**
#4 @ 12" (SINGLE) 
10'-0" (DOUBLE)  
3" 
#4's @ 9" (MIN 2 FOR 2' PAN)  
3" 
2' APRON (TYP.)  
MIRROR IF NECESSARY  
EXPANSION JOINT  
ROADWAY CROSS SLOPE  
6" MIN. CURB  
#5 DOWEL @ 12"  
SECTION A-A'

### NOTES:
1. A 2-FOOT CONCRETE TRANSITION APRON SHALL BE CONSTRUCTED AS SHOWN AND SHALL BE KEYED INTO THE INLET.
2. CONCRETE APRON SHALL BE THE SAME THICKNESS AND TYPE AS THE SURROUNDING CONCRETE (8-INCHES MINIMUM).
NOTES:
1. AREA INLET TYPE 2 IS NOT HS-20 RATED AND SHALL NOT BE PLACED IN ROADWAYS OR PARKING AREAS.
2. AREA INLET TYPE 2 GRATE IS NOT ADA COMPLIANT OR BICYCLE FRIENDLY AND SHALL NOT BE PLACED DIRECTLY IN SIDEWALKS, CROSSWALKS OR BIKE PATH.

SECTION A-A'

SECTION B-B'

STORM DRAIN
AREA INLET TYPE 2

APPROVED: ____________________________

CITY ENGINEER: ____________________________

ISSUED: 6/19/20
REVISIONS: D-95
CLOSE MESH GRATE

SECTION A-A'

SLOT DETAIL

ALTERNATE SLOT AND HOLD DOWN PLATE DETAIL

STORM DRAIN AREA INLET TYPE 2 GRATE