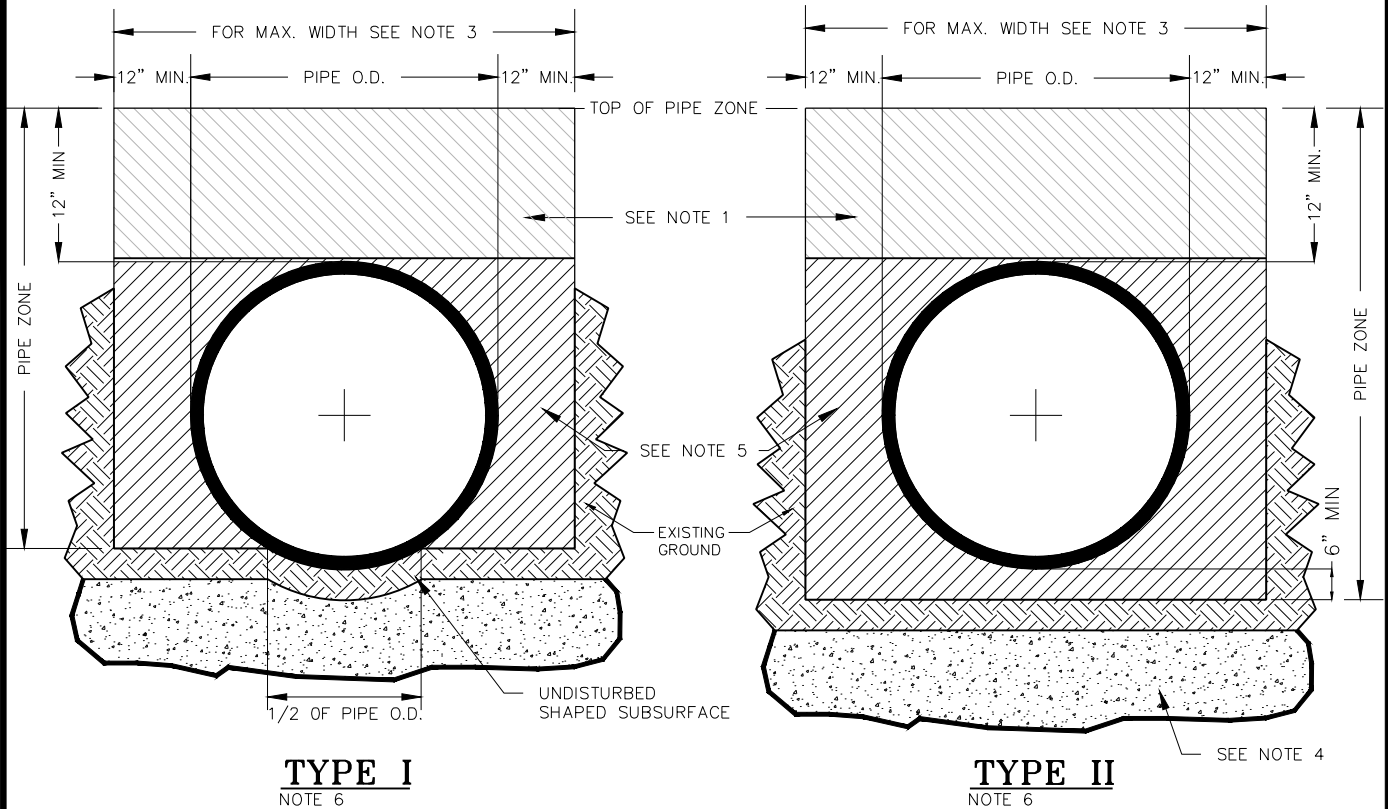


STORM DRAINAGE SYSTEM STANDARD DETAILS

INDEX:

<i>PIPE ZONE/TRENCH DETAIL.....</i>	<i>SD-01</i>
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<i>DOUBLE GRATE HOODED INLET.....</i>	<i>SD-03</i>
<i>SINGLE GRATE COMBO BOX.....</i>	<i>SD-04</i>
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<i>DETENTION STRUCTURE W/CANAL GATE ORIFICE.....</i>	<i>SD-06 1OF2</i>
<i>DETENTION STRUCTURE W/CANAL GATE ORIFICE.....</i>	<i>SD-06 2OF2</i>
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1	APPROVED BY C.C.		DEC. 2025	 ENGINEERING	<u>STORM DRAINAGE SYSTEM STANDARDS</u>	SD-00
NO.	AUTHORIZED BY	REVISIONS	DATE			



GENERAL NOTES

1. USE UNTREATED BASE COURSE MATERIAL. COMPACT TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY OF THE MODIFIED PROCTOR AS PER CURRENT ASTM D 1557 OR AASHTO T 180 SPECIFICATIONS; AT $\pm 2\%$ OF OPTIMUM MOISTURE CONTENT.

2. "O.D." MEANS OUTSIDE DIAMETER OF PIPE BARREL.
"I.D." MEANS INSIDE DIAMETER OF PIPE BARREL.

3. MAXIMUM WIDTH OF TRENCH MEASURED AT THE TOP OF THE PIPE, INCLUDING ANY NECESSARY SHEATHING IS AS FOLLOWS:

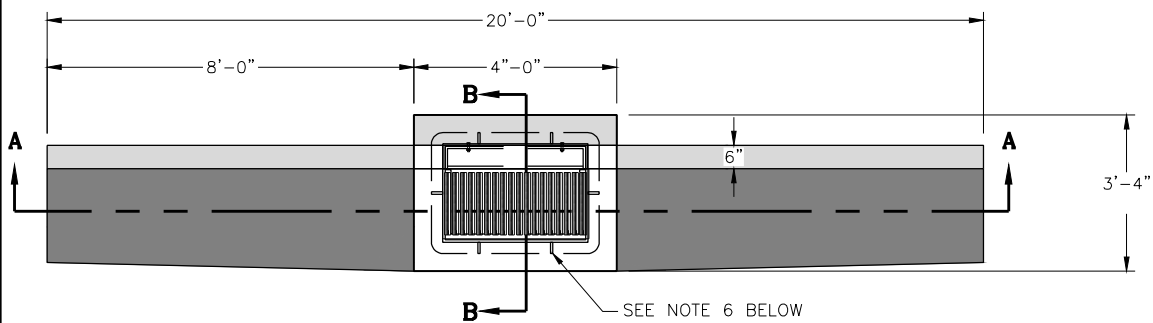
PIPE I.D.	MAX. TRENCH WIDTH
LESS THAN 33"	O.D. + 24"
GREATER THAN 33"	O.D. + 30"

4. FOR FOUNDATION STABILIZATION, (IF NEEDED)
USE AGGREGATE CONFORMING TO DRAPER CITY SPECIFICATIONS, SECTION 02230, 2.07.

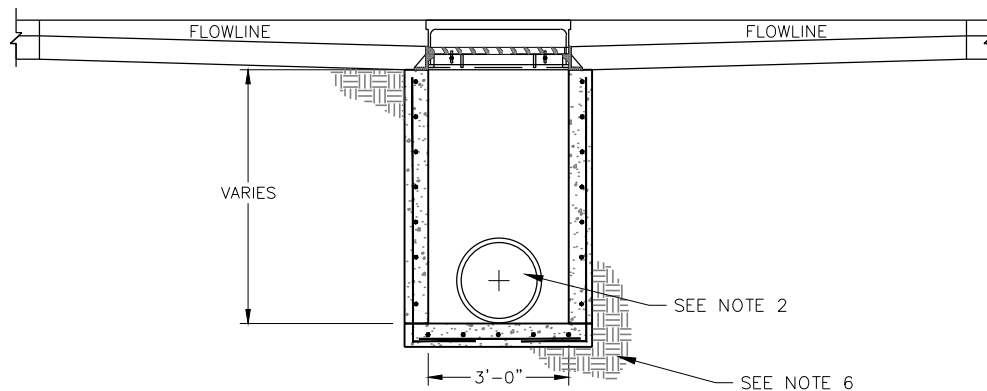
5. USE GRANULAR BORROW MEETING A-1
OR A-2 CLASSIFICATION FILL FOR
BACKFILL/PIPE BEDDING TO TOP OF PIPE.

6. TYPE I: RIGID NON-PRESSURE PIPE
TYPE II: FLEXIBLE NON-PRESSURE PIPE

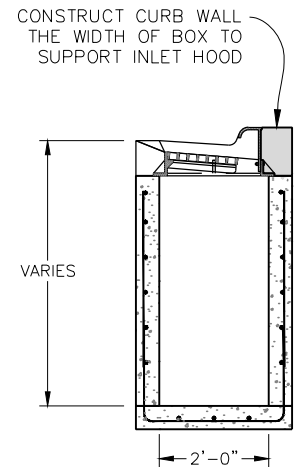
1	APPROVED BY C.C.		DEC. 2025	 ENGINEERING	PIPE ZONE/TRENCH DETAIL	SD-01
NO.	AUTHORIZED BY	REVISIONS	DATE			



PLAN VIEW: CURB INLET BOX
N.T.S.



SECTION A-A
N.T.S.

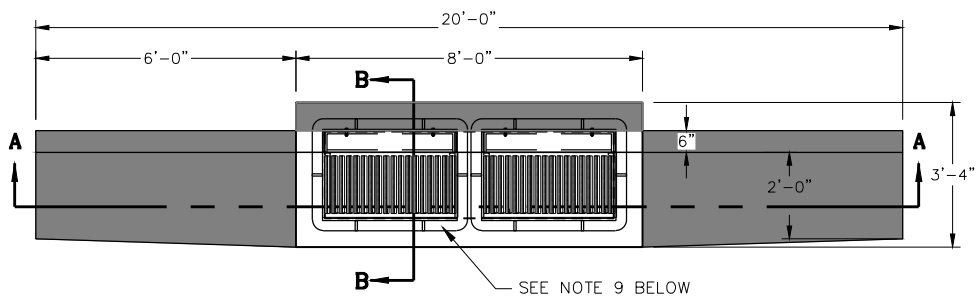


SECTION B-B
N.T.S.

NOTES:

1. ALL INLET BOXES SHALL BE HS-20 LOAD RATED AND HAVE NO KNOCK-OUT PANELS
2. BOX SIZES, DEPTHS, LOCATIONS, AND PIPE SIZES WILL BE SHOWN ON OTHER DRAWINGS
3. PRECAST CONCRETE LEVELING COLLAR AVAILABLE IN 4, 6 OR 8 INCH THICKNESS. GROUT UNDER MANHOLE COVER FRAME AS REQUIRED TO LEVEL.
4. THE FRAME AND GRATING SHALL BE CAST DUCTILE IRON, CONFORMING TO THE AASHTO STANDARD SPECIFICATIONS FOR DUCTILE IRON CASTINGS A.S.T.M. DESIGNATION A-256, GRADE 60-45-10.
5. SEE DRAWING SD-07 FOR GRATE, FRAME, AND LADDER STEPS SPECIFICATIONS.
6.  BACKFILL: INSTALL BACKFILL IN LIFTS NOT EXCEEDING 8" AFTER COMPACTION. COMPACT TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY OF THE MODIFIED PROCTOR AS PER CURRENT ASTM D 1557 OR AASHTO T-180 SPECIFICATIONS; AT $\pm$ 2% OF OPTIMUM MOISTURE CONTENT.

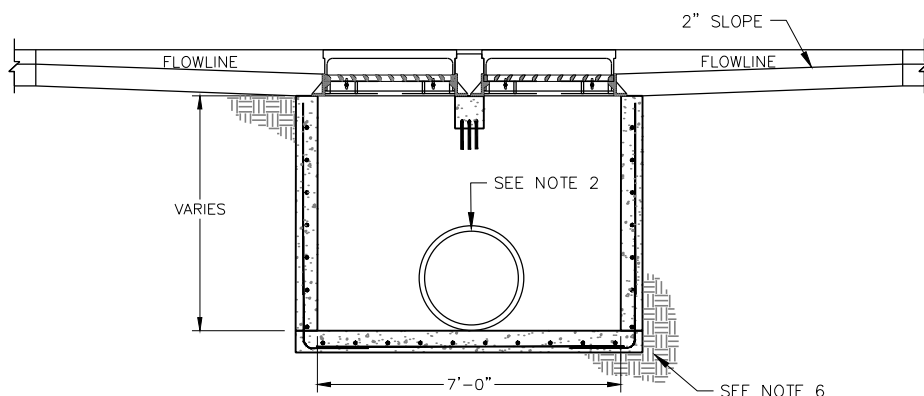
1	APPROVED BY C.C.		DEC. 2025		STANDARD SINGLE GRATE HOODED INLET BOX	SD-02
NO.	AUTHORIZED BY	REVISIONS	DATE			



PLAN VIEW: CURB INLET BOX

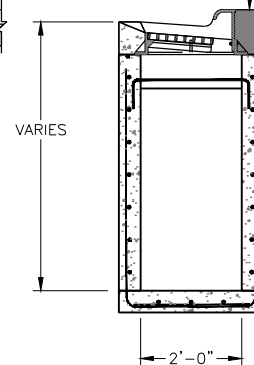
N.T.S.

CONSTRUCT CURB WALL
THE WIDTH OF BOX TO
SUPPORT INLET HOOD



SECTION A-A

N.T.S.



SECTION B-B

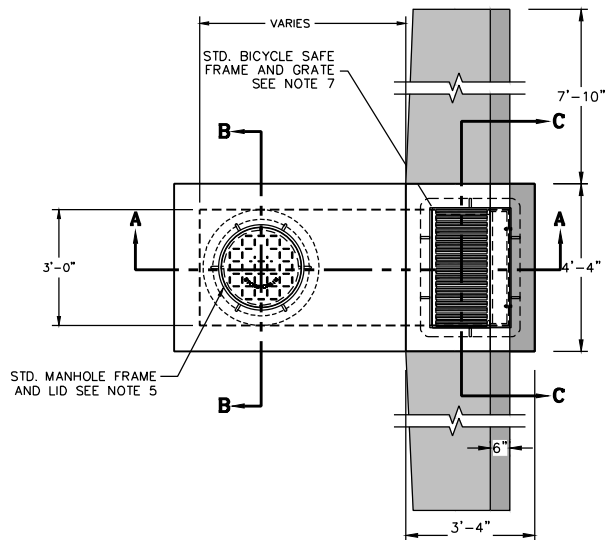
N.T.S.

NOTES:

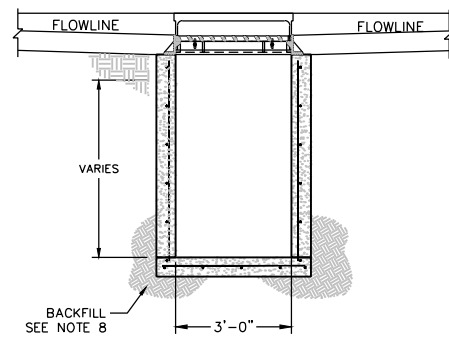
1. ALL INLET BOXES SHALL BE HS-20 LOAD RATED AND HAVE NO KNOCK-OUT PANELS.
2. BOX SIZES, DEPTHS, LOCATIONS, AND PIPE SIZES WILL BE SHOWN ON OTHER DRAWINGS.
3. PRECAST CONCRETE LEVELING COLLAR AVAILABLE IN 4, 6 OR 8 INCH THICKNESS. GROUT UNDER MANHOLE COVER FRAME AS REQUIRED TO LEVEL.
4. THE FRAME AND GRATING SHALL BE CAST DUCTILE IRON, CONFORMING TO THE A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR DUCTILE IRON CASTINGS A.S.T.M. DESIGNATION A-256, GRADE 60-45-10.
5. SEE DRAWING SD-07 FOR GRATE, FRAME, AND LADDER STEPS,
6.  BACKFILL: INSTALL BACKFILL IN LIFTS NOT EXCEEDING 8" AFTER COMPACTION. COMPACT TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY OF THE MODIFIED PROCTOR AS PER CURRENT ASTM D 1557 OR AASHTO T-180 SPECIFICATIONS; AT $\pm 2\%$ OF OPTIMUM MOISTURE CONTENT.

1	APPROVED BY C.C.		DEC. 2025		STANDARD DOUBLE GRATE HOODED INLET BOX	SD-03
NO.	AUTHORIZED BY	REVISIONS	DATE			

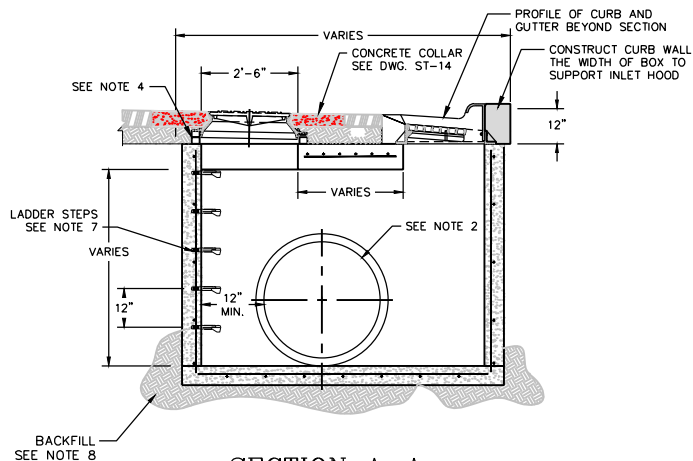
N:\Engineering\General Documents\Storm Drainage System Standard Details\SD-04.DWG, 12/8/2025 4:59:57 PM



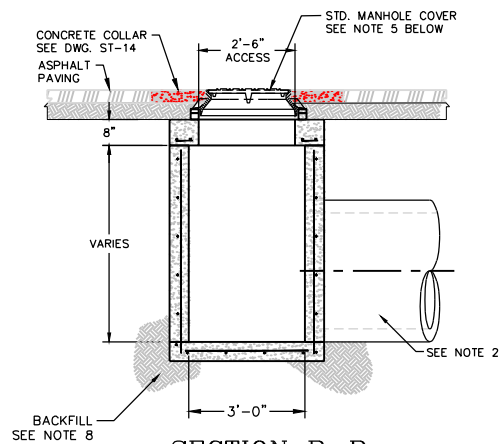
PLAN VIEW COMBINATION BOX
N.T.S.



SECTION C-C
N.T.S.



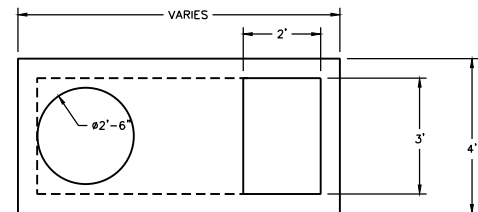
SECTION A-A
N.T.S.



SECTION B-B
N.T.S.

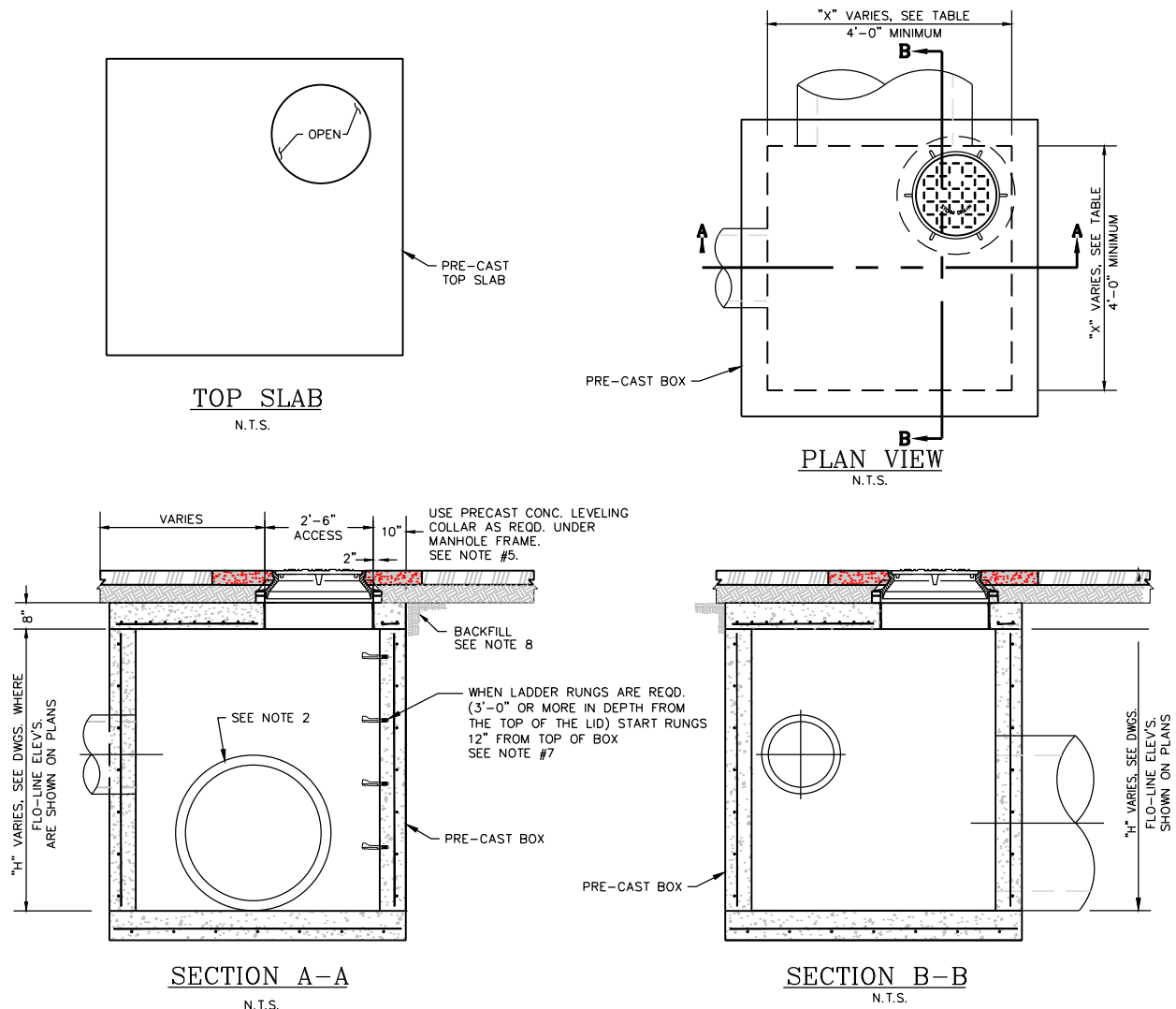
NOTES:

1. ALL STORM DRAIN BOXES SHALL BE HS-20 LOAD RATED AND HAVE NO KNOCK-OUT PANELS.
2. BOX SIZES, FLOWLINE ELEVATIONS, PIPE SIZES AND LOCATIONS WILL BE SHOWN ON OTHER DRAWINGS.
3. ALL CONCRETE SHALL BE CLASS AA(AE), 4000 P.S.I. PORTLAND CEMENT.
4. PRECAST CONCRETE LEVELING COLLAR AVAILABLE IN 4, 6 OR 8 INCH THICKNESS. GROUT UNDER MANHOLE COVER FRAME AS REQUIRED TO LEVEL.
5. FOR STANDARD MANHOLE, USE D&L SUPPLY MODEL A-1180 OR EQUIVALENT.
6. THE FRAME AND GRATING SHALL BE CAST DUCTILE IRON, CONFORMING TO THE AASHTO STANDARD SPECIFICATIONS FOR DUCTILE IRON CASTINGS A.S.T.M. DESIGNATION A-256, GRADE 60-45-10.
7. SEE DRAWING SD-07 FOR GRATE, FRAME, AND LADDER STEPS SPECIFICATIONS.
8.  BACKFILL: INSTALL BACKFILL IN LIFTS NOT EXCEEDING 8" AFTER COMPACTION. COMPACT TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY OF THE MODIFIED PROCTOR AS PER CURRENT ASTM D 1557 OR AASHTO T-180 SPECIFICATIONS; AT $\pm$ 2% OF OPTIMUM MOISTURE CONTENT.



TOP SLAB
N.T.S.

1	APPROVED BY C.C.		DEC. 2025		SINGLE GRATE COMBINATION BOX	SD-04
NO.	AUTHORIZED BY	REVISIONS	DATE			



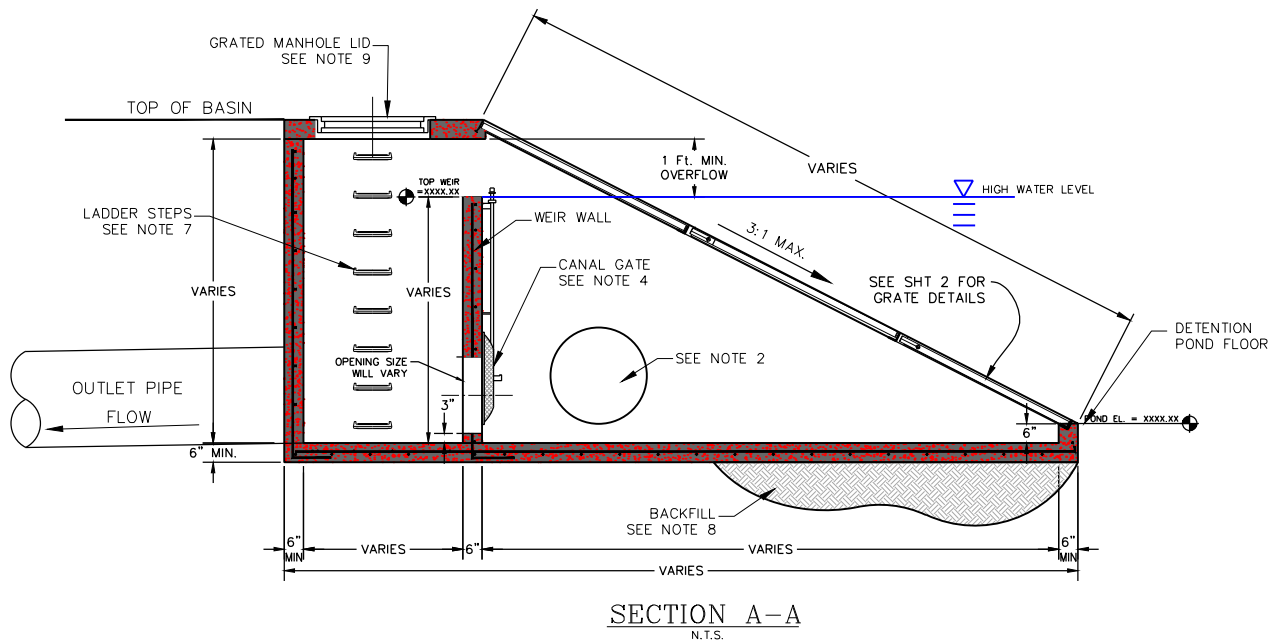
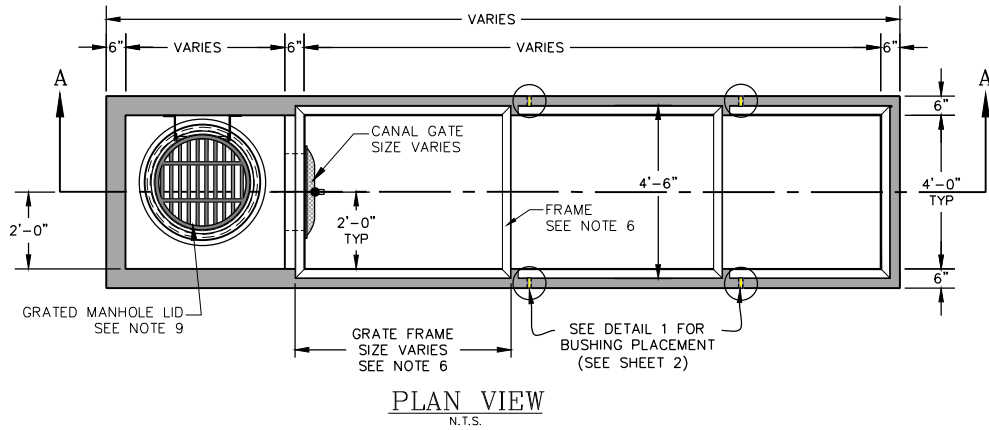
NOTES:

- ALL STORM DRAIN BOXES SHALL BE HS-20 LOAD RATED AND HAVE NO KNOCK-OUT PANELS
- BOX SIZES, FLOWLINE ELEVATIONS, PIPE SIZES AND LOCATIONS WILL BE SHOWN ON OTHER DRAWINGS.
- 450' MAX BETWEEN CLEANOUT BOXES
- ALL CONCRETE SHALL BE CLASS AA(AE), 4000 P.S.I. PORTLAND CEMENT.
- PRECAST CONCRETE LEVELING COLLAR AVAILABLE IN 4, 6 OR 8 INCH THICKNESS. GROUT UNDER MANHOLE COVER FRAME AS REQUIRED TO LEVEL.
- FOR STANDARD MANHOLE, USE D&L SUPPLY MODEL A-1180 OR EQUIVALENT.
- SEE DRAWING SD-07 FOR GRATE, FRAME, AND LADDER STEPS SPECIFICATIONS.
-  BACKFILL: INSTALL BACKFILL IN LIFTS NOT EXCEEDING 8" AFTER COMPACTION. COMPACT TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY OF THE MODIFIED PROCTOR AS PER CURRENT ASTM D 1557 OR AASHTO T-180 SPECIFICATIONS; AT $\pm$ 2% OF OPTIMUM MOISTURE CONTENT.

PIPE SIZE	DIMENSION "X"
15"	4'-0"
18"	4'-0"
21"	4'-0"
24"	4'-0"
27"	5'-0"
30"	5'-0"
33"	5'-0"
36"	5'-0"
42"	6'-0"
48"	6'-0"

FOR LARGER PIPE SIZE, CHECK WITH CITY ENGINEER.

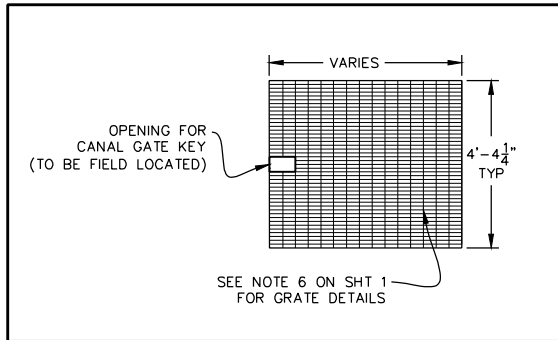
1	APPROVED BY C.C.		DEC. 2025		STANDARD CLEANOUT BOX	SD-05
NO.	AUTHORIZED BY	REVISIONS	DATE			



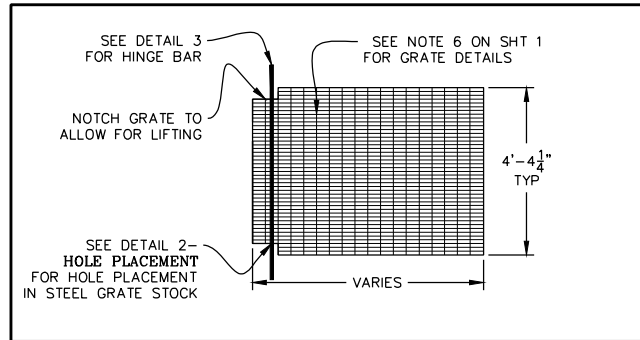
NOTES:

1. ALL STORM DRAIN BOXES SHALL BE HS-20 LOAD RATED AND HAVE NO KNOCK-OUT PANELS.
2. BOX SIZES, FLOWLINE ELEVATIONS, PIPE SIZES AND LOCATIONS WILL BE SHOWN ON OTHER DRAWINGS.
3. ALL CONCRETE SHALL BE CLASS AA(AE), 4000 P.S.I. PORTLAND CEMENT.
4. FURNISH AND INSTALL WATERMAN MODEL C-10 FLAT BACK, (SIZE WILL VARY) W/ TRUE NON-RISING STEM CANAL GATE, WITH 2" NUT FOR REMOVABLE OPERATOR OR EQUAL AS APPROVED BY ENGINEER.
5. FOR STANDARD MANHOLE, USE D&L SUPPLY MODEL A-1180 OR EQUIVALENT.
6. FRAMES SHALL BE 2½" X 2½" X ¼" "L" CHANNEL W/NELSON STUD ANCHORS AT 12" O.C. GRATES SHALL BE "BROWN-CAMPBELL CO. PRODUCT BG2316 2" X ¾" FLAT BAR STOCK GRATING" OR EQUAL. HOT DIP GALVANIZED POST CONSTRUCTION. 4" CENTER TO CENTER SPACING TO RUN PERPENDICULAR TO THE SLOPE OF THE CONTROL STRUCTURE.
7. SEE DRAWING SD-07 FOR LADDER STEPS SPECIFICATIONS.
8.  BACKFILL: INSTALL BACKFILL IN LIFTS NOT EXCEEDING 8" AFTER COMPACTION. COMPACT TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY OF THE MODIFIED PROCTOR AS PER CURRENT ASTM D 1557 OR AASHTO T-180 SPECIFICATIONS; AT ± 2% OF OPTIMUM MOISTURE CONTENT.
9. PROVIDE 36"Ø OPENING IN TOP OF BOX AS SHOWN IN PLAN VIEW. FURNISH AND INSTALL D&L MANHOLE RING AND GRATE MODEL NO. D-6120 OR APPROVED EQUAL.

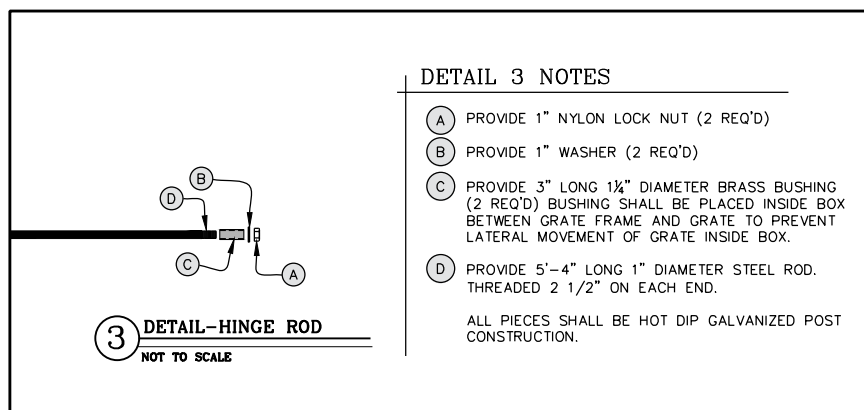
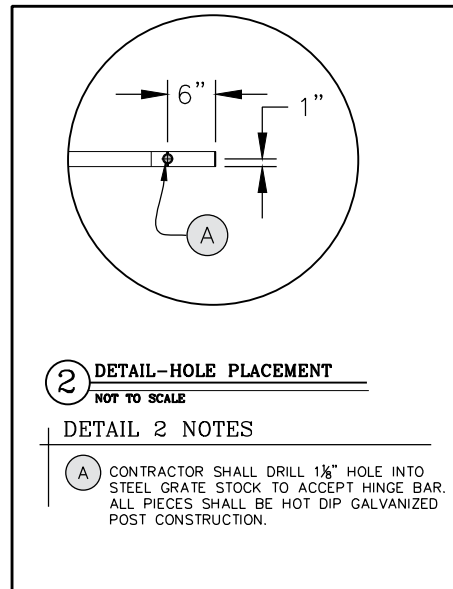
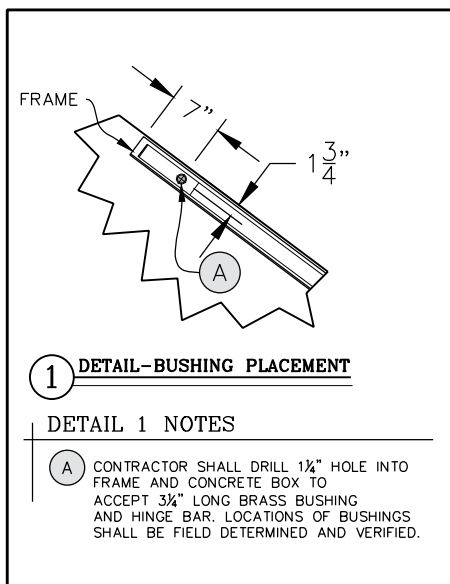
1	APPROVED BY C.C.		DEC. 2025		DETENTION STRUCTURE W/CANAL GATE ORIFICE	SD-06 1 of 2
NO.	AUTHORIZED BY	REVISIONS	DATE			



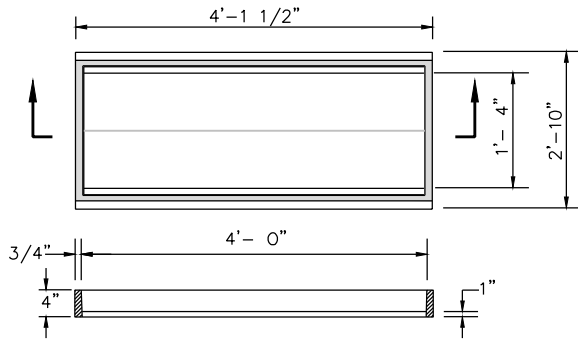
A DETAIL-TOP GRATE



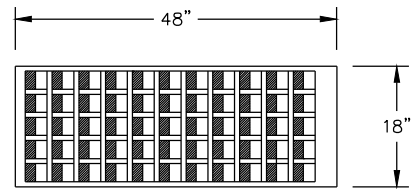
B DETAIL-HINGED GRATES



1	APPROVED		SEPT. 06		DETENTION STRUCTURE W/CANAL GATE ORIFICE	SD-06 2 of 2
NO.	AUTHORIZED BY	REVISIONS	DATE			



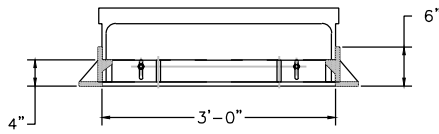
FRAME DETAIL
N.T.S.



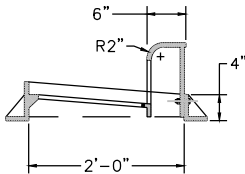
GRATE DETAIL
N.T.S.

- * D&L I-1803 OR EQUAL
- * CAST IRON OR STEEL
- * BICYCLE PROOF
- * DESIGN FOR H-20 LOADING

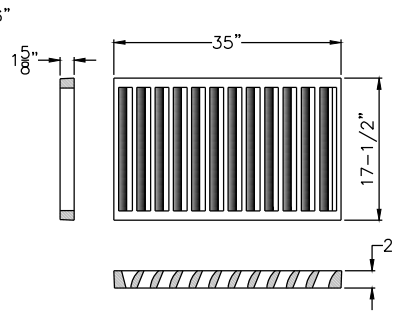
D & L SUPPLY
MODEL I-1803 (OR APPROVED EQUAL)
OR AS DIRECTED BY CITY ENGINEER



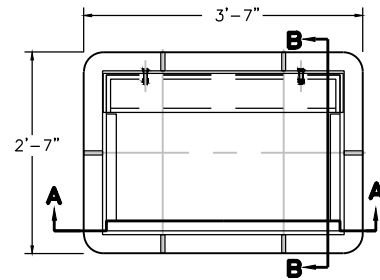
SECTION A-A
N.T.S.



SECTION B-B
N.T.S.

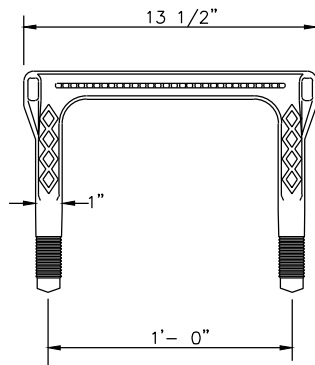


GRATE DETAIL
N.T.S.

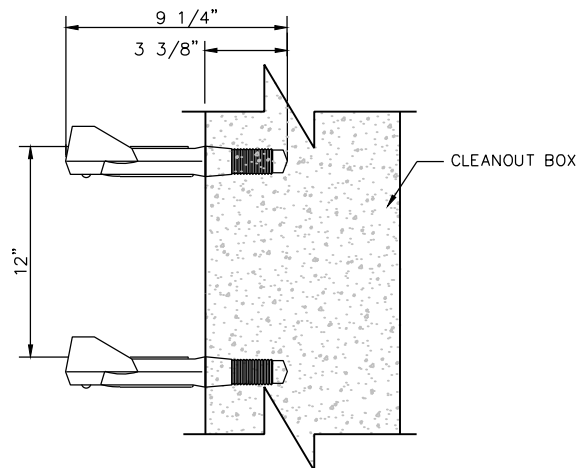


CURB HOOD INLET
N.T.S.

D & L SUPPLY
MODEL I-3516 (OR APPROVED EQUAL)
OR AS DIRECTED BY CITY ENGINEER



LADDER RUNG DETAIL
N.T.S.



INSTALLATION DETAIL
N.T.S.

M. A. INDUSTRIES INC.
COPOLYMER POLYPROPYLENE STEPS
(OR APPROVED EQUAL)

1	APPROVED BY C.C.		DEC. 2025
NO.	AUTHORIZED BY	REVISIONS	DATE



**STORM DRAIN
BOX DETAILS**

SD-07