



Number: E-09-002

Date: January 16, 2009

ENGINEERING DIRECTIVE

Frank A. Tramontozzi (Signature on Original)

CHIEF ENGINEER

Hook Lock Grates for Catch Basins

Drawings

The following Standard Construction Drawings (attached) are issued for use as described herein, effective immediately:

- 201.6.0 R Catch Basin Frame
- 201.7.0 R Type B-1 Hook Lock Cascade Grate – Flow From Left
- 201.7.1 Type B-2 Hook Lock Cascade Grate – Flow From Right
- 201.9.0 R Type B-1 Grate and Frame – Flow From Left – Assembly Details
- 201.9.1 Type B-2 Grate and Frame – Flow From Right – Assembly Details
- 201.10.0 R Type A-4 Hook Lock Bar Grate
- 201.10.1 Type A-4 Hook Lock Bar Grate and Frame Assembly Details

The following Standard Construction Drawings issued 9/22/95 are superseded by the corresponding drawings listed above, effective immediately:

- 201.6.0 Catch Basin Frame
- 201.7.0 Massachusetts Cascade Grate
- 201.9.0 Frame for Massachusetts Cascade Grate
- 201.10.0 Catch Basin Grate Type A-1 for Freeways and Expressways

The following Standard Construction Drawing issued 9/22/95 shall be deleted, effective immediately:

- 201.8.0 Cascade Bar Design for Massachusetts Cascade Grate

Application

Hook Lock Grates shall be used as the standard catch basin grates on MassHighway roadways. Catch Basin Frames as shown in the attached Drawings are machined to ensure a non-rocking fit and must be used with each Hook Lock Grate.

Post: _____

Do Not Post: _____

Hook Lock Cascade Grates may be used on any facility, but **must** be used on all MassHighway roadways where bicycle traffic is allowed.

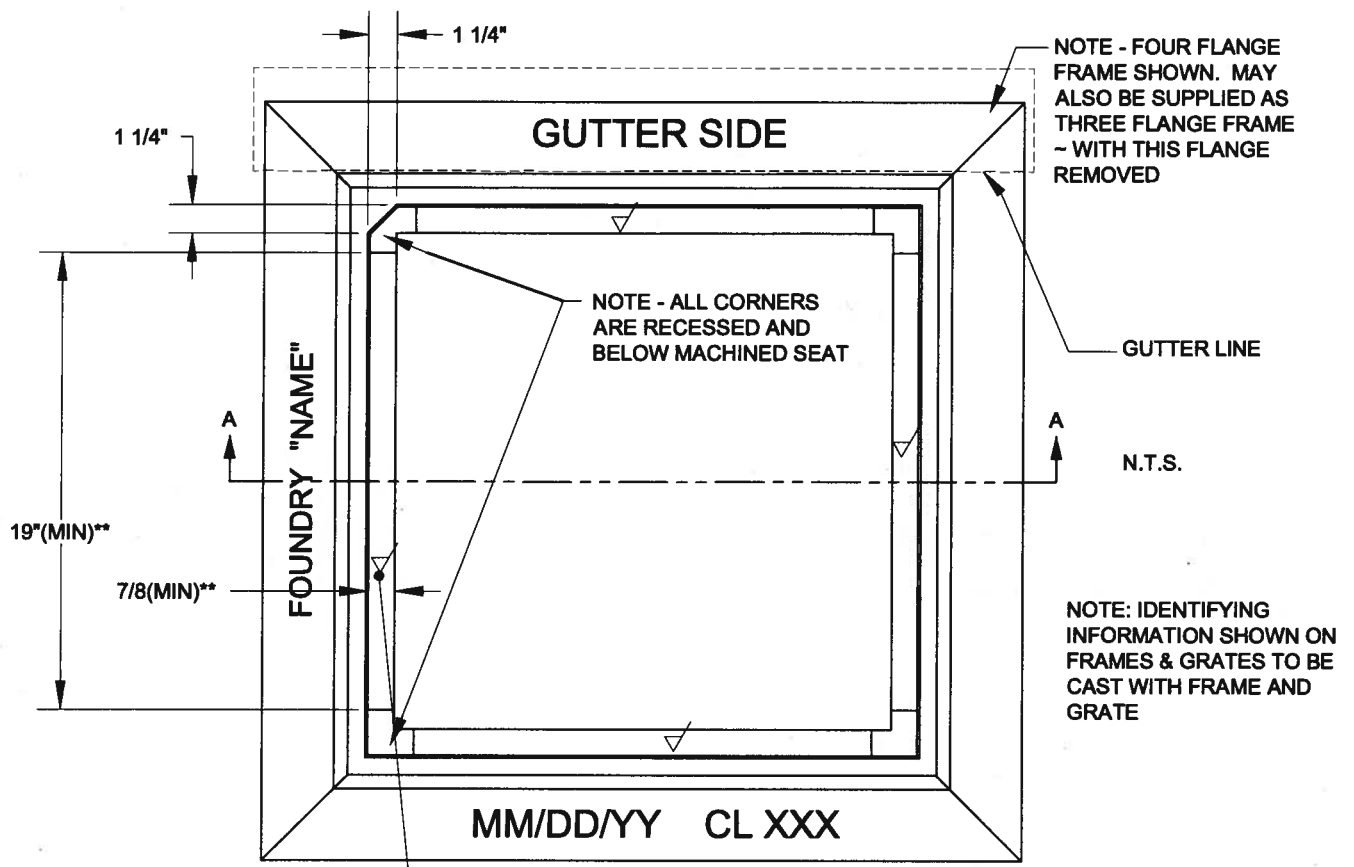
Hook Lock Cascade Grates or municipal standard grates shall be used on municipally-owned roadways per the direction of the affected municipality.

Hook Lock Bar Grates shall only be used on limited access facilities where bicycles are prohibited from the roadway.

Frames and grates conforming to this Directive shall be incorporated into the specifications and bid documents for all projects advertised after the date of this Directive. The specifications and bid documents for these projects shall also include the replacement of all existing frames and grates within the limits of the project, if the existing frames and grates do not conform to this Directive.

Hook Lock Grates and conforming Catch Basin Frames may be installed by Extra Work Order on active construction projects at the direction of the Construction Engineer, provided a reasonable price can be established and agreed to.

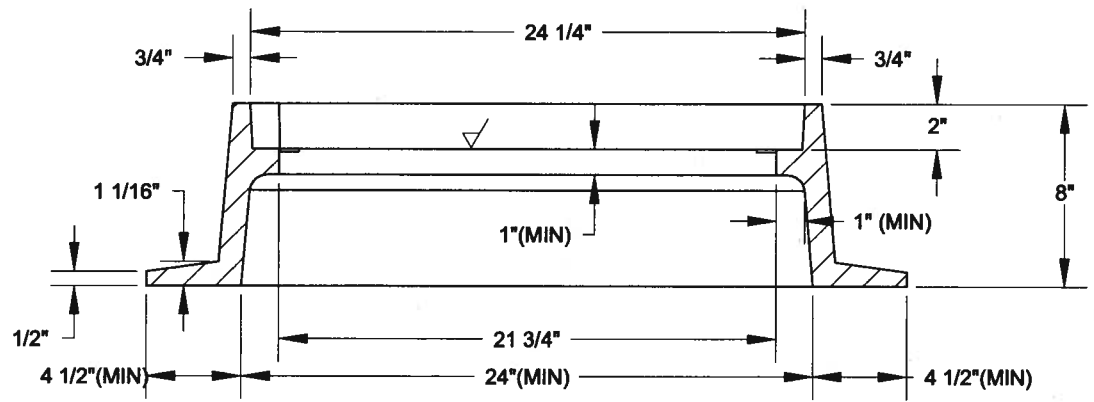
Attachments: New Standard Construction Drawings



MACHINE TOLERANCES:
 ▽ MACHINED SEATS (4) REQUIRED
 FLAT AND IN PLANE WITHIN .010"
 TOTAL INDICATOR READING

CLASSIFICATION:
 ASTM A48 CLASS 30B GRAY CAST IRON
 WITH NO BLACK ASPHALT COATING ALLOWED

NOTE: IDENTIFYING INFORMATION SHOWN ON FRAMES & GRATES TO BE CAST WITH FRAME AND GRATE



WEIGHTS:
 3-FLANGE FRAME 265 LBS. MIN
 4-FLANGE FRAME 295 LBS. MIN

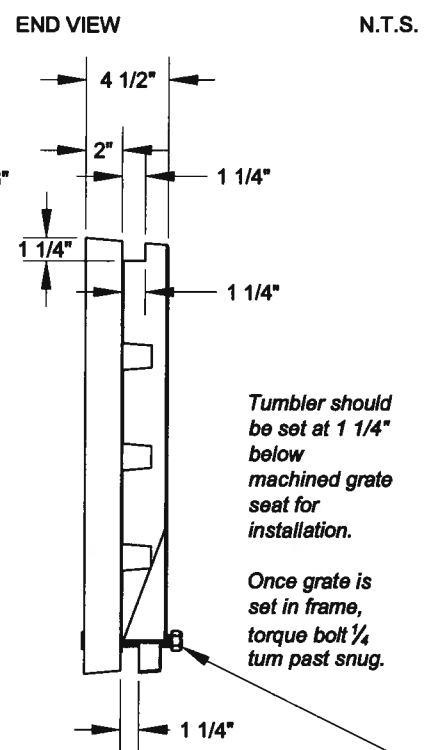
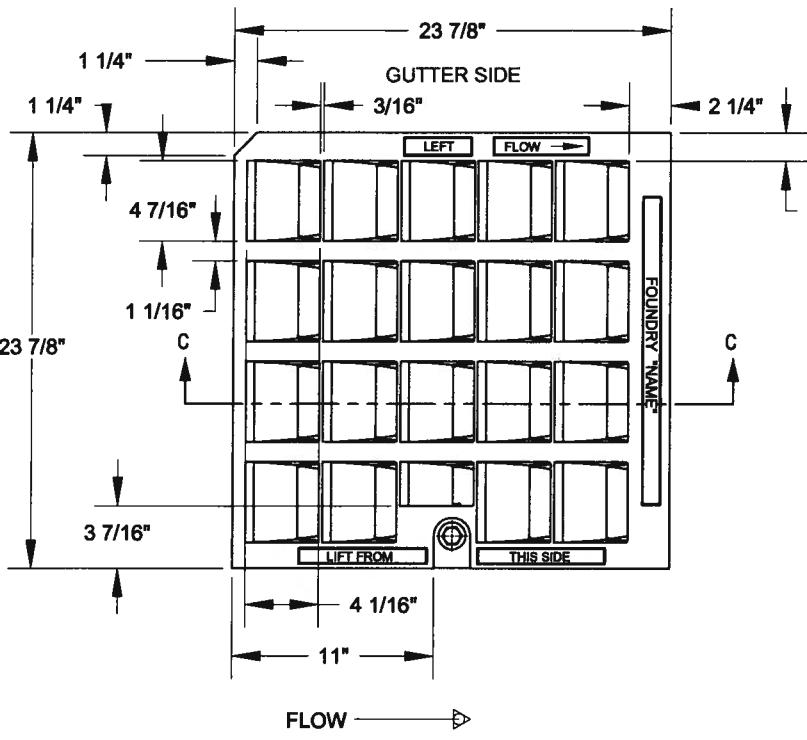
AASHTO HS 20 LOAD RATED

CASTING TOLERANCES:
 DIMENSIONS ARE IN INCHES -
 FRACTIONAL ± 1/16" ON ALL
 DIMENSIONS UP TO 12" AND ADD
 ADDITIONAL ± 1/16" PER FOOT



CATCH BASIN FRAME

DATE OF ISSUE
 Jan 2009
 DRAWING NUMBER
 201.6.0 R



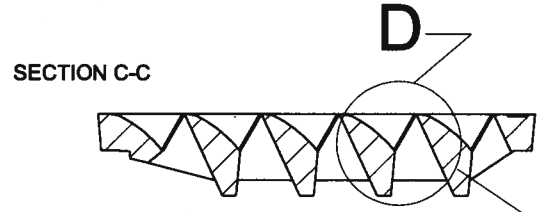
Tumbler should be set at 1 1/4" below machined grate seat for installation.

Once grate is set in frame, torque bolt 1/4 turn past snug.

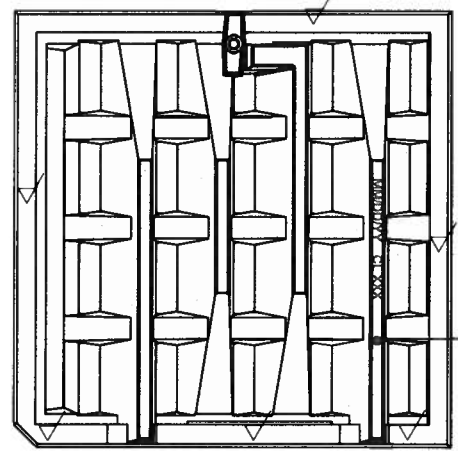
#6 LOCK TUMBLER ASSEMBLY (1) REQUIRED - CONSISTS OF:

- 5/8" x 5" ST. STL. BOLT
- 5/8" ST. STL. FLAT WASHER
- CAST IRON TUMBLER
- ST. STL. CAPTURE NUT

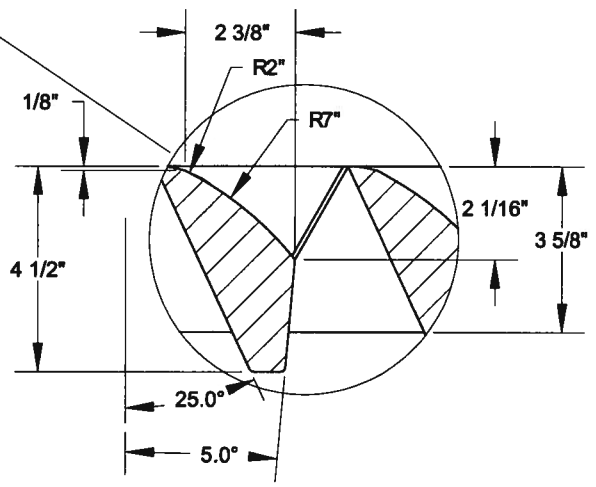
STAINLESS STEEL GRADE 304



CLASSIFICATION:
ASTM A48 CLASS 30B GRAY CAST IRON
 WITH NO BLACK ASPHALT COATING ALLOWED



CAST BACK FACE WITH MOLD DATE AND PART NO.



WEIGHT: 265 LBS. MIN
AASHTO HS 20 PROOF LOAD

NOTE: IDENTIFYING INFORMATION SHOWN ON FRAMES & GRATES TO BE CAST WITH FRAME AND GRATE

Machine tolerances:
 Surfaces noted \checkmark must be machined flat and in-plane within .010" Total Indicator Reading

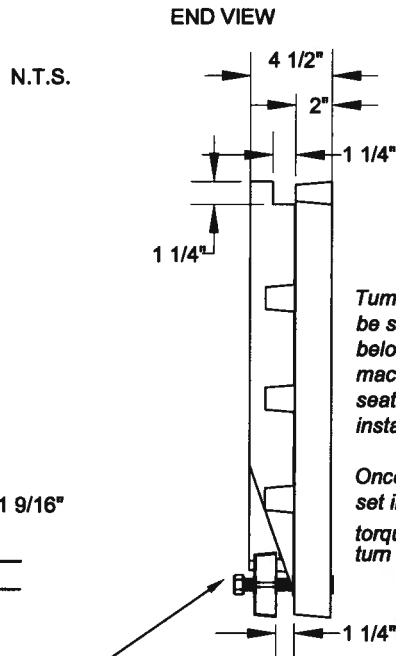
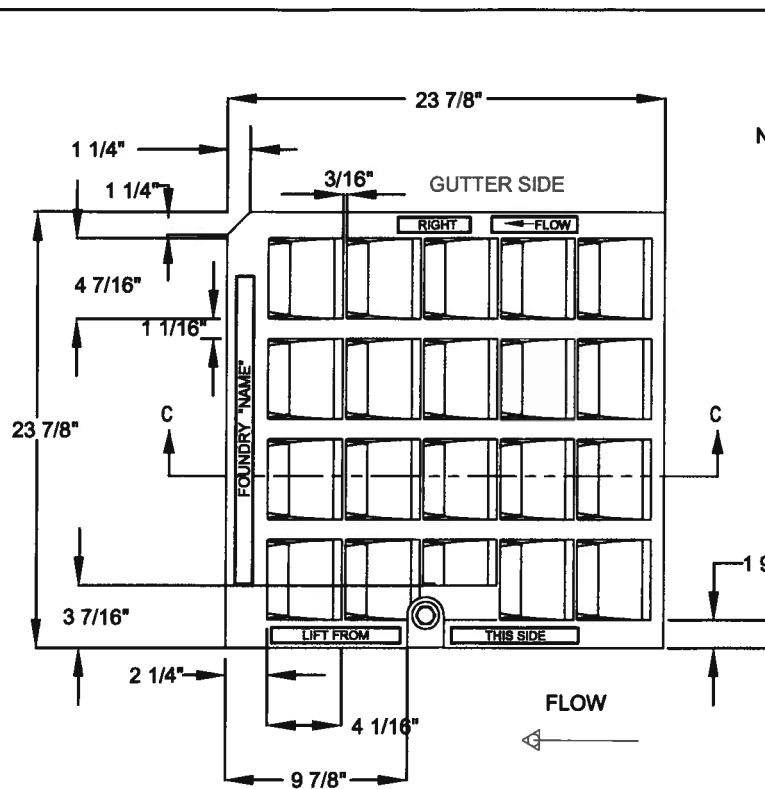
CASTING TOLERANCES:
 DIMENSIONS ARE IN INCHES - FRACTIONAL $\pm 1/16"$ ON ALL DIMENSIONS UP TO 12" AND ADD ADDITIONAL $\pm 1/16"$ PER FOOT



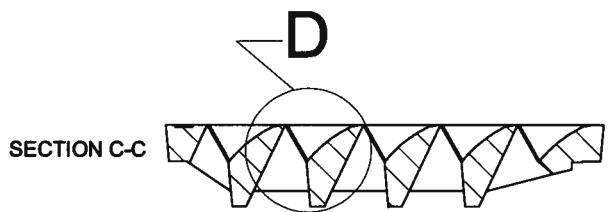
TYPE B-1
HOOKLOCK CASCADE GRATE
FLOW FROM LEFT

DATE OF ISSUE
 Jan 2009

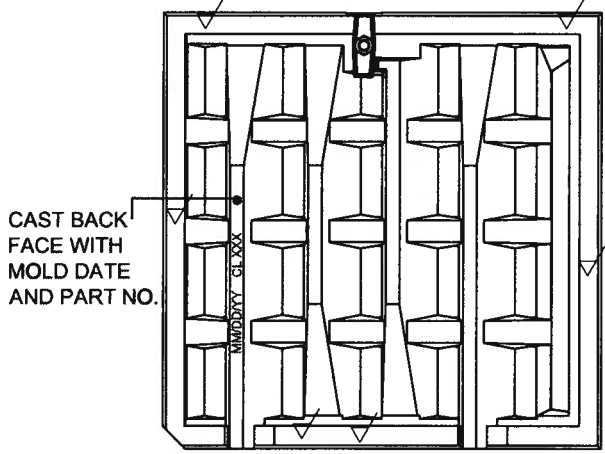
DRAWING NUMBER
201.7.0 R



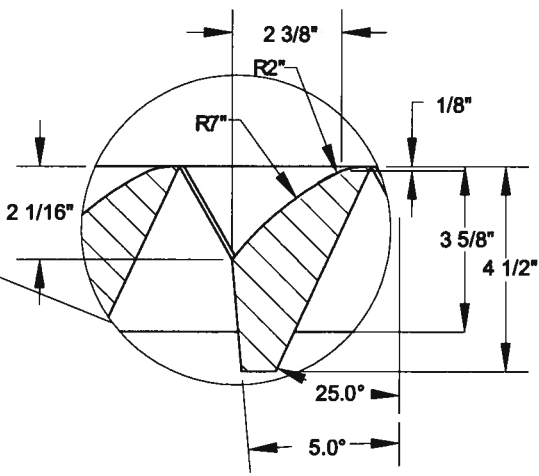
#6 LOCK TUMBLER ASSEMBLY
 (1) REQUIRED—CONSISTS OF:
 5/8" x 5" ST. STL. BOLT
 5/8" ST. STL. FLAT WASHER
 CAST IRON TUMBLER
 ST. STL. CAPTURE NUT
 STAINLESS STEEL GRADE 304



WEIGHT: 265 LBS. MIN
 AASHTO HS 20 PROOF LOAD



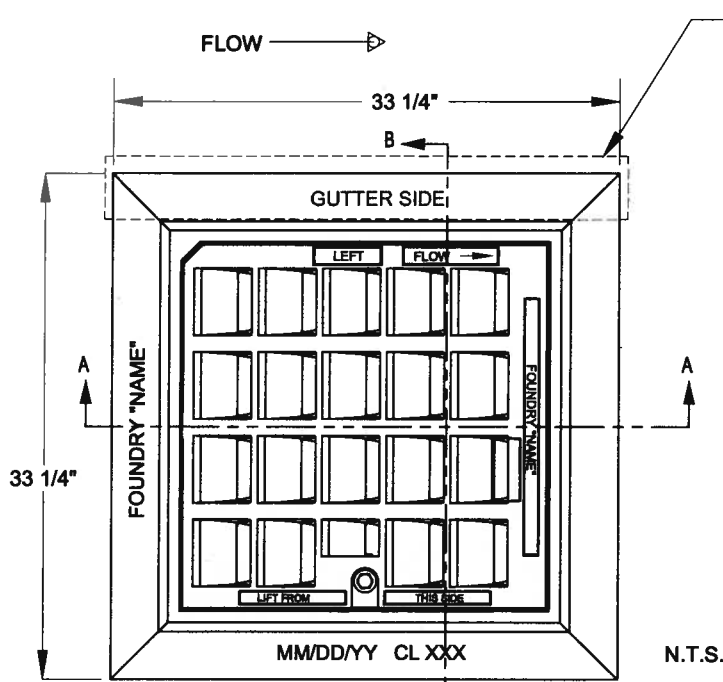
NOTE: IDENTIFYING INFORMATION SHOWN ON FRAMES & GRATES TO BE CAST WITH FRAME AND GRATE



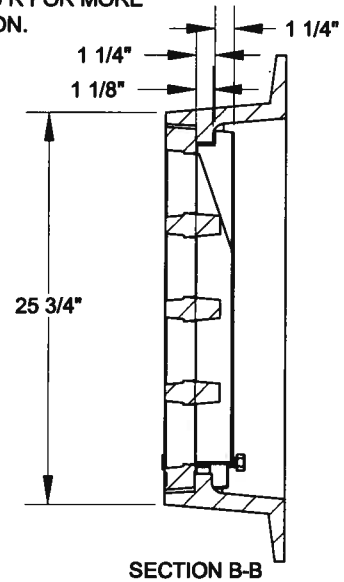
CLASSIFICATION:
ASTM A48 CLASS 30B
GRAY CAST IRON
 WITH NO BLACK ASPHALT COATING ALLOWED

Machine tolerances:
 Surfaces noted ✓ must be machined flat and in-plane within .010" Total Indicator Reading

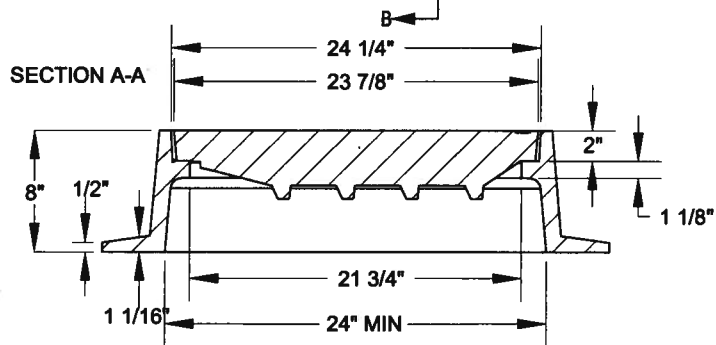
CASTING TOLERANCES:
 DIMENSIONS ARE IN INCHES - FRACTIONAL ± 1/16" ON ALL DIMENSIONS UP TO 12" AND ADD ADDITIONAL ± 1/16" PER FOOT



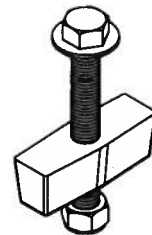
FRAME MAY BE INSTALLED WITH THIS FLANGE REMOVED FOR CURB INLET. FOUR FLANGE IS SHOWN. ~ SEE DWG 201.6.0 R FOR MORE INFORMATION.



N.T.S.



AASHTO HS 20 PROOF LOAD



#6 LOCK TUMBLER ASSEMBLY (1) REQUIRED-CONSISTS OF:

5/8" x 5" ST. STL. BOLT
5/8" ST. STL. FLAT WASHER
CAST IRON TUMBLER
ST. STL. CAPTURE NUT

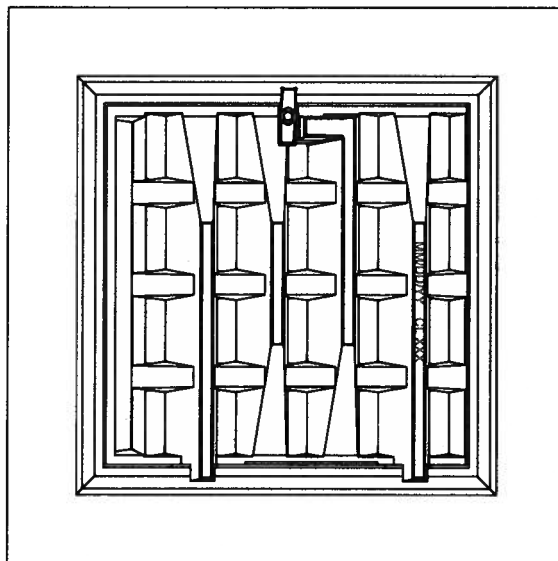
STAINLESS STEEL GRADE 304

CLASSIFICATION:
ASTM A48 CLASS 30B GRAY CAST IRON
WITH NO BLACK ASPHALT COATING ALLOWED

Tumbler should be set at 1 1/4" below machined grate seat for installation.

Once grate is set in frame, torque bolt 1/4 turn past snug.

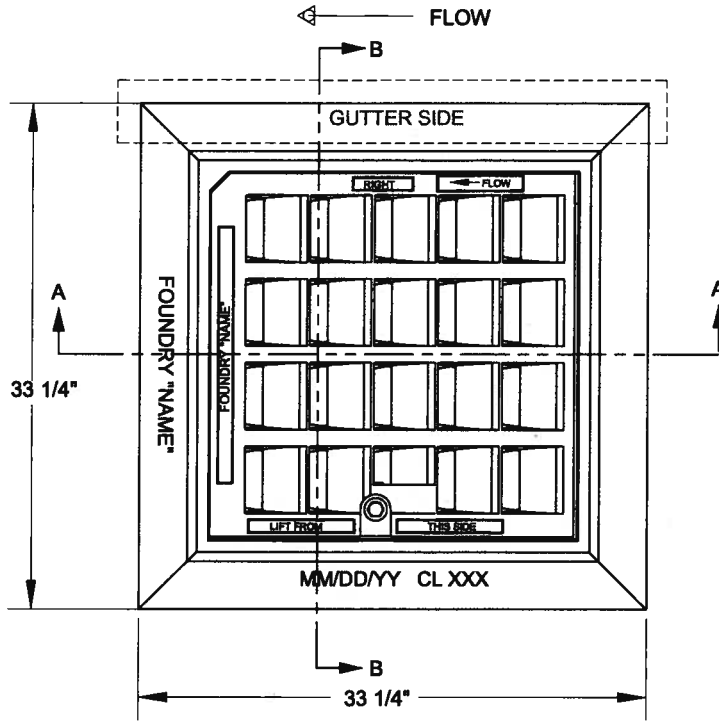
WEIGHTS:
3-FLANGE FRAME 265 LBS. MIN
4-FLANGE FRAME 295 LBS. MIN
B-1 GRATE 265 LBS. MIN



NOTE: SEAT SURFACES ON BOTH FRAME AND GRATE ARE MACHINED AND GRATE MUST NOT ROCK IN FRAME WHEN ASSEMBLED.

NOTE: IDENTIFYING INFORMATION SHOWN ON FRAMES & GRATES TO BE CAST WITH FRAME AND GRATE

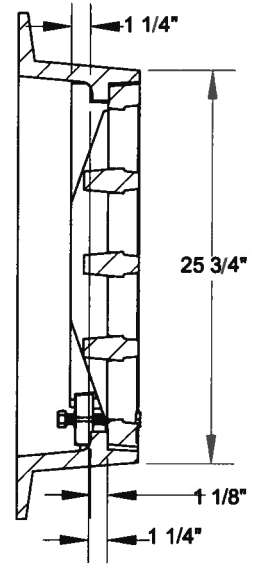
CASTING TOLERANCES:
DIMENSIONS ARE IN INCHES -
FRACTIONAL $\pm 1/16"$ ON ALL
DIMENSIONS UP TO 12" AND ADD
ADDITIONAL $\pm 1/16"$ PER FOOT



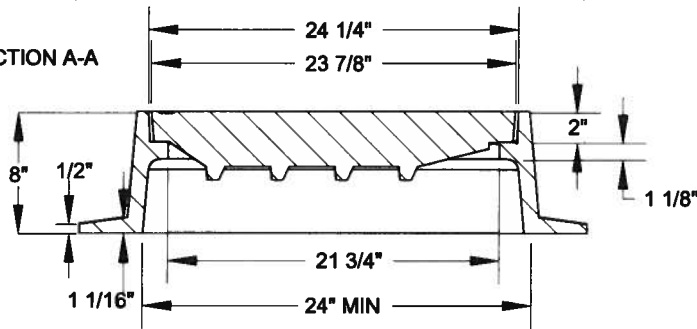
FRAME MAY BE INSTALLED WITH THIS FLANGE REMOVED FOR CURB INLET. FOUR FLANGE IS SHOWN. ~ SEE DWG 201.6.0 R FOR MORE INFORMATION.

CLASSIFICATION:
ASTM A48 CLASS 30B
GRAY CAST IRON
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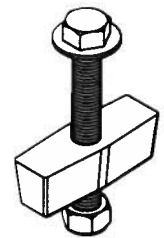
AASHTO HS 20 PROOF LOAD
 N.T.S.



SECTION A-A



SECTION B-B



#6 LOCK TUMBLER ASSEMBLY
 (1) REQUIRED—CONSISTS OF:

5/8" x 5" ST. STL. BOLT
 5/8" ST. STL. FLAT WASHER
 CAST IRON TUMBLER
 ST. STL. CAPTURE NUT

STAINLESS STEEL GRADE 304

Tumbler should be set at 1 1/4" below machined grate seat for installation.

Once grate is set in frame, torque bolt 1/4 turn past snug.

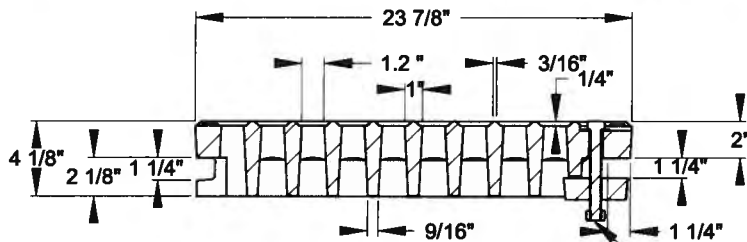
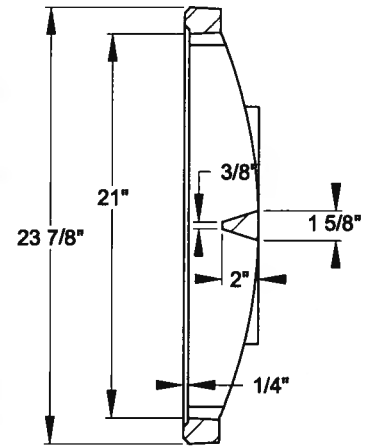
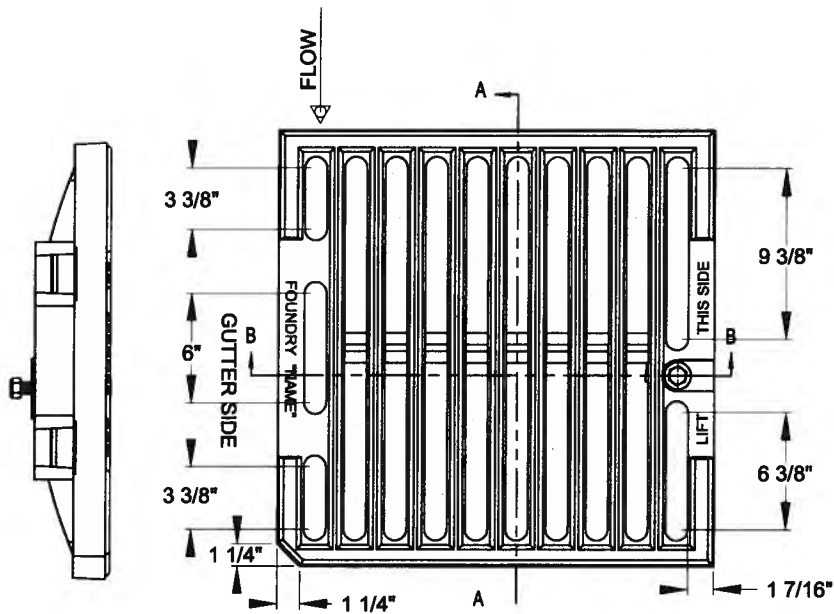
WEIGHTS:

3-FLANGE FRAME	265 LBS. MIN
4-FLANGE FRAME	295 LBS. MIN
B-2 GRATE	265 LBS. MIN

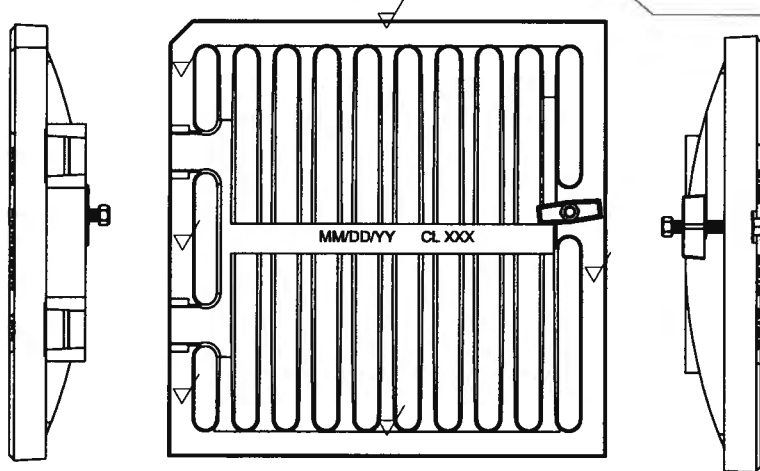
CASTING TOLERANCES:
 DIMENSIONS ARE IN INCHES -
 FRACTIONAL ± 1/16" ON ALL
 DIMENSIONS UP TO 12" AND ADD
 ADDITIONAL ± 1/16" PER FOOT

NOTE: SEAT SURFACES ON BOTH FRAME AND GRATE ARE MACHINED AND GRATE MUST NOT ROCK IN FRAME WHEN ASSEMBLED.

NOTE: IDENTIFYING INFORMATION SHOWN ON FRAMES & GRATES TO BE CAST WITH FRAME AND GRATE



N.T.S.
 WEIGHT: 205 LBS. (MIN)
 NOTE: IDENTIFYING
 INFORMATION SHOWN ON
 FRAMES & GRATES TO BE
 CAST WITH FRAME AND
 GRATE



#6 LOCK TUMBLER ASSEMBLY

- (1) REQUIRED--CONSISTS OF:
 5/8" x 5" ST. STL. BOLT
 5/8" ST. STL. FLAT WASHER
 CAST IRON TUMBLER
 ST. STL. CAPTURE NUT
 STAINLESS STEEL GRADE 304

AASHTO HS 20 PROOF LOAD

CLASSIFICATION:
ASTM A48 CLASS 30B GRAY CAST IRON
 WITH NO BLACK ASPHALT COATING
 ALLOWED

Machine tolerances:

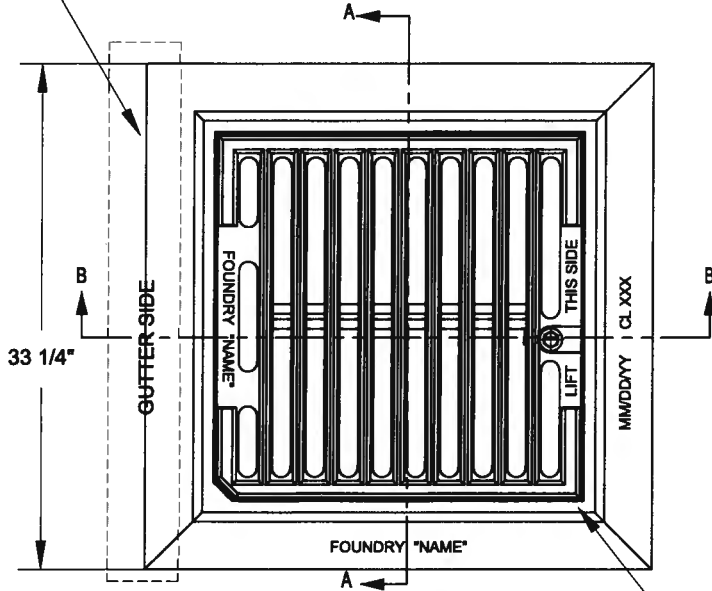
Surfaces noted \checkmark must
 be machined flat and
 in-plane within .010"
 Total Indicator Reading

CASTING TOLERANCES:
 DIMENSIONS ARE IN INCHES -
 FRACTIONAL $\pm 1/16"$ ON ALL
 DIMENSIONS UP TO 12" AND ADD
 ADDITIONAL $\pm 1/16"$ PER FOOT

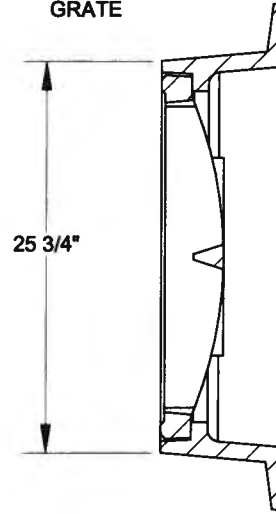
Tumbler should be set at 1 1/4" below machined grate seat for installation.

Once grate is set in frame, torque bolt to 85 ft.lb. (1/4 turn from hand snug)

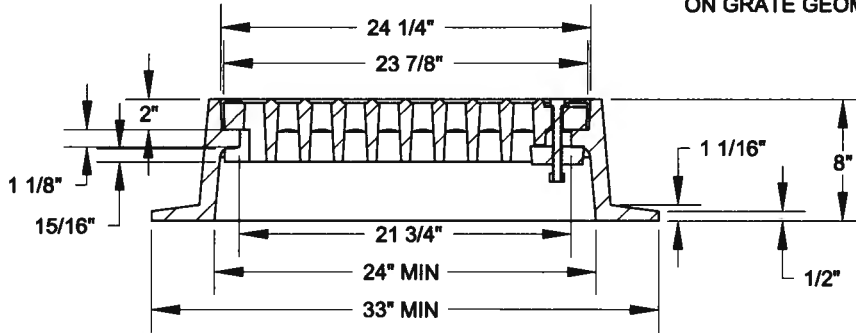
FRAME MAY BE INSTALLED WITH THIS FLANGE REMOVED FOR CURB INLET. FOUR FLANGE IS SHOWN. SEE DWG 201.6.0 R FOR MORE INFORMATION.



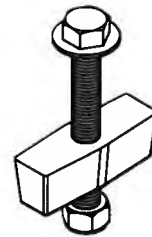
NOTE: IDENTIFYING INFORMATION SHOWN ON FRAMES & GRATES TO BE CAST WITH FRAME AND GRATE



SEE DWG # FOR MORE INFORMATION ON GRATE GEOMETRY.



N.T.S.

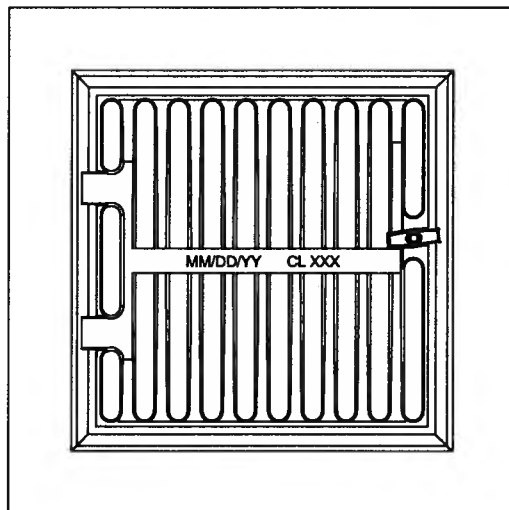


#6 LOCK TUMBLER ASSEMBLY (1) REQUIRED—CONSISTS OF:

5/8" x 5" ST. STL. BOLT
5/8" ST. STL. FLAT WASHER
CAST IRON TUMBLER
ST. STL. CAPTURE NUT

STAINLESS STEEL GRADE 304

AASHTO
HS 20
PROOF
LOAD



CASTING TOLERANCES:

DIMENSIONS ARE IN INCHES -
FRACTIONAL $\pm 1/16"$ ON ALL
DIMENSIONS UP TO 12" AND ADD
ADDITIONAL $\pm 1/16"$ PER FOOT

CLASSIFICATION:

ASTM A48 CLASS 30B GRAY CAST IRON
WITH NO BLACK ASPHALT COATING ALLOWED

NOTE: SEAT SURFACES ON BOTH FRAME AND
GRATE ARE MACHINED AND GRATE MUST NOT
ROCK IN FRAME WHEN ASSEMBLED.

*Tumbler should be set at 1 1/4" below
machined grate seat for installation.*

*Once grate is set in frame, torque bolt to
85 ft.lb. (1/4 turn from hand snug)*

WEIGHTS:

3-FLANGE FRAME	265 LBS. MIN
4-FLANGE FRAME	295 LBS. MIN
A-4 GRATE	205 LBS. MIN



TYPE A-4
HOOKLOCK BAR GRATE AND
FRAME ASSEMBLY DETAILS

DATE OF ISSUE
Jan 2009

DRAWING NUMBER
201.10.1