



Number: E-09-003

Date: 6-18-09

ENGINEERING DIRECTIVE

Frank A. Tramontozzi (Signature on Original)

CHIEF ENGINEER

Hook Lock Grates for Catch Basins

This Engineering Directive supersedes and replaces Engineering Directive E-09-002, dated January 16, 2009.

Drawings

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

- 201.6.0 R2 Catch Basin Frame
- 201.7.0 R2 Type B-1 Hook Lock Cascade Grate – Flow From Left
- 201.7.1 R Type B-2 Hook Lock Cascade Grate – Flow From Right
- 201.9.0 R2 B-1 Grate and Frame – Flow From Left – Assembly Details
- 201.9.1 R B-2 Grate and Frame – Flow From Right – Assembly Details
- 201.10.0 R2 Type A-4 Hook Lock Bar Grate
- 201.10.1 R Type A-4 Hook Lock Bar Grate and Frame Assembly Details

The following Standard Construction Drawings issued January 16, 2009, are superseded by the corresponding drawings listed above, effective immediately: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 B-1 Grate and Frame – Flow From Left – Assembly Details
- 201.9.1 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

Application

- Hook Lock Grates shall be used as the standard catch basin grates on MassHighway facilities. 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: _____

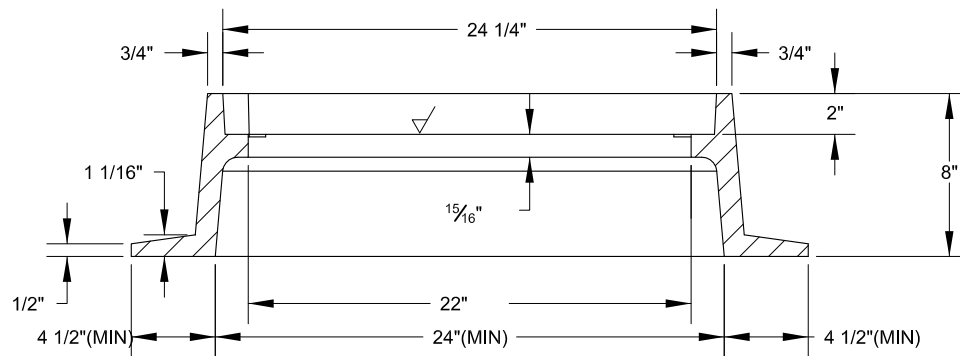
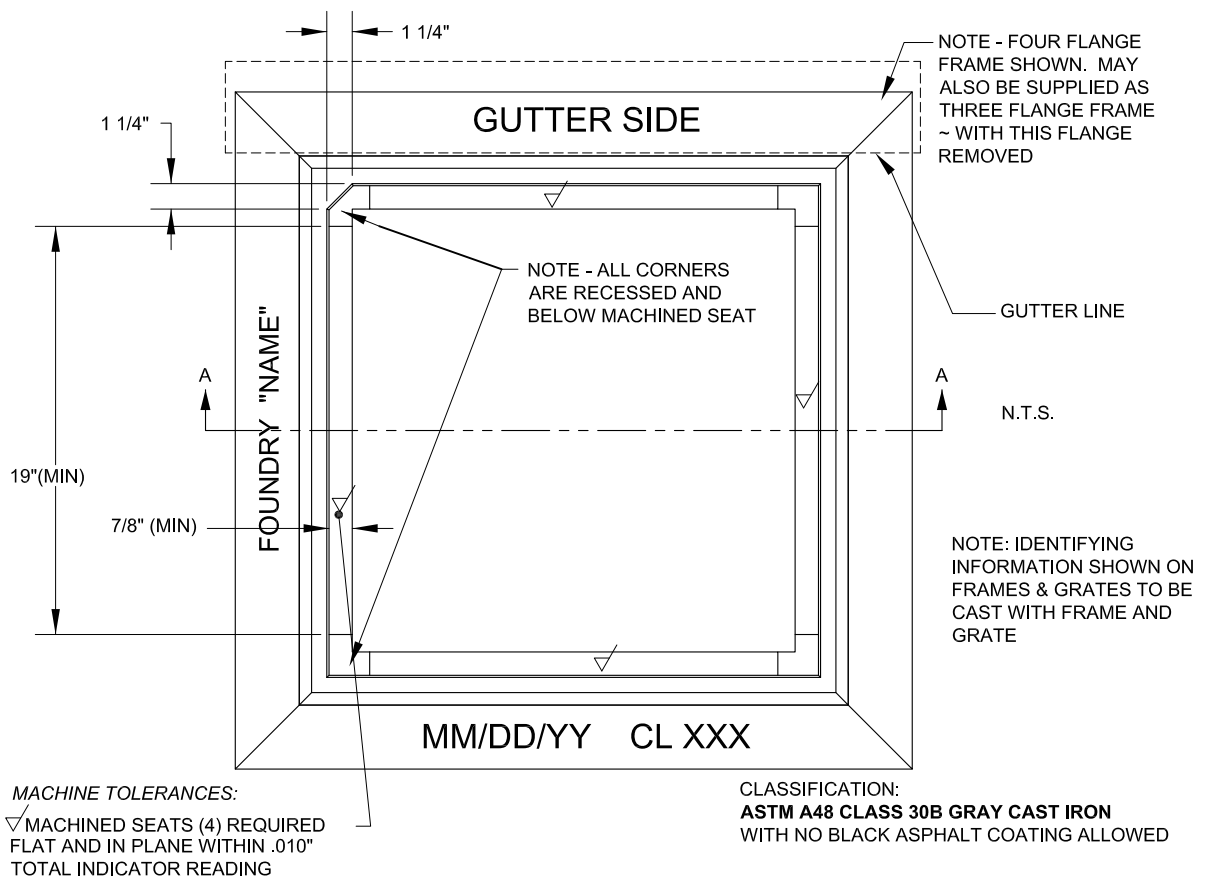
Do Not Post: X

- Hook Lock Cascade Grates shall be used on facilities where bicycle travel is legally allowed. Hook Lock Bar Grates shall be used on all other facilities.
- On municipally-owned facilities, municipal standard grates may be used in lieu of Hook Lock Grates per the direction of the affected municipality.
- 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.
- Refer to Engineering Directive E-07-003, “Drainage Structures”, and other relevant policies and standards for additional guidance regarding drainage structures.

Attachments: New Standard Construction Drawings

Post: _____

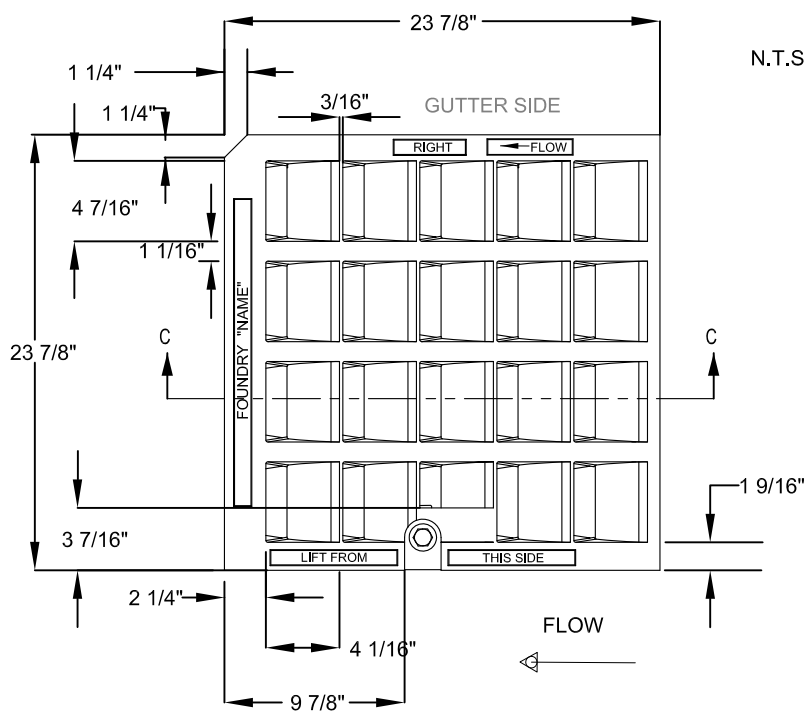
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WEIGHTS:
 3-FLANGE FRAME 240 LBS. MIN
 4-FLANGE FRAME 270 LBS. MIN

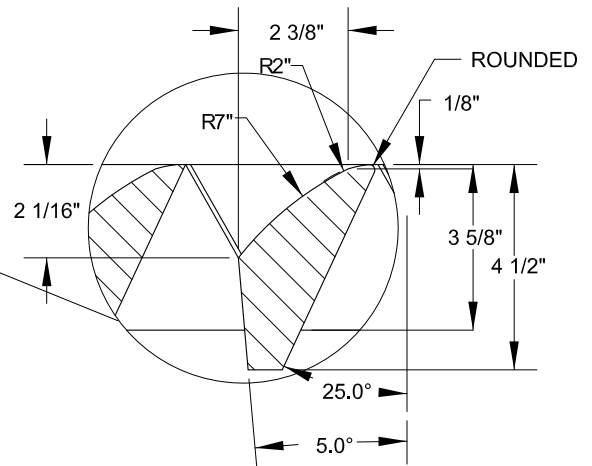
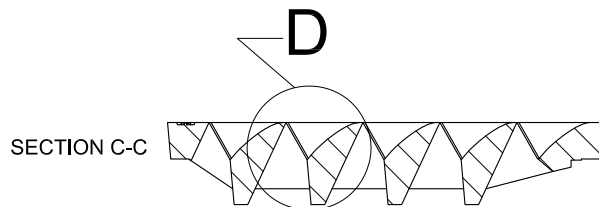
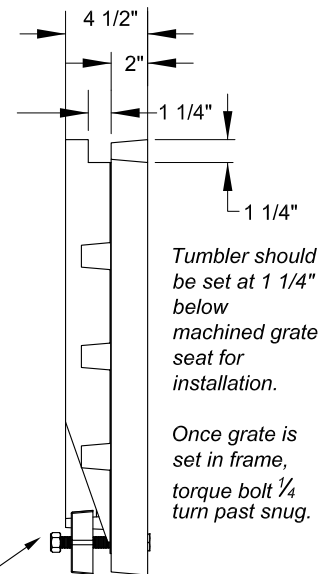
AASHTO HS 20 LOAD RATED

CASTING TOLERANCES:
 SHALL CONFORM TO AASHTO
 M306



N.T.S.

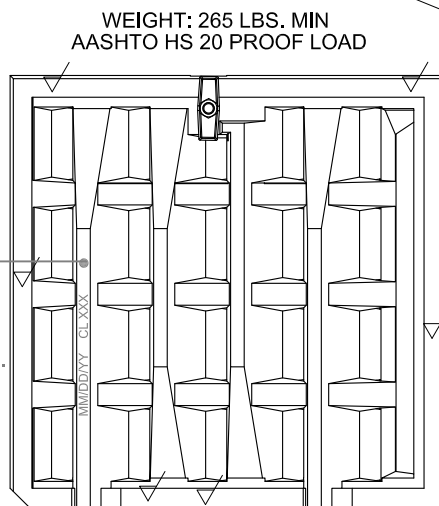
END VIEW




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

CASTING TOLERANCES:
SHALL CONFORM TO AASHTO
M306

CAST BACK
FACE WITH
MOLD DATE
AND PART NO.



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

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

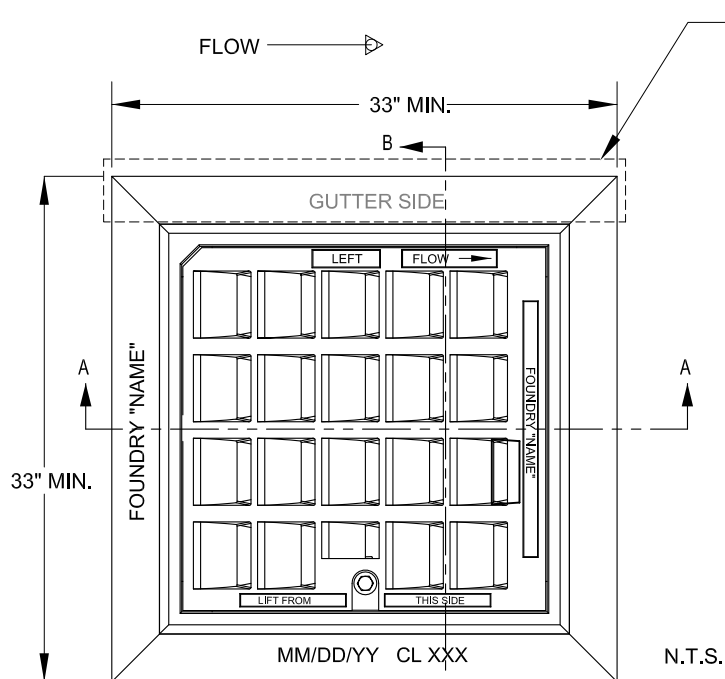
NOTE: CASCADE GRATE ONLY TO BE
USED ON FACILITIES WHERE BICYCLE
TRAVEL IS LEGALLY ALLOWED.

MASS HIGHWAY
CONSTRUCTION
STANDARDS

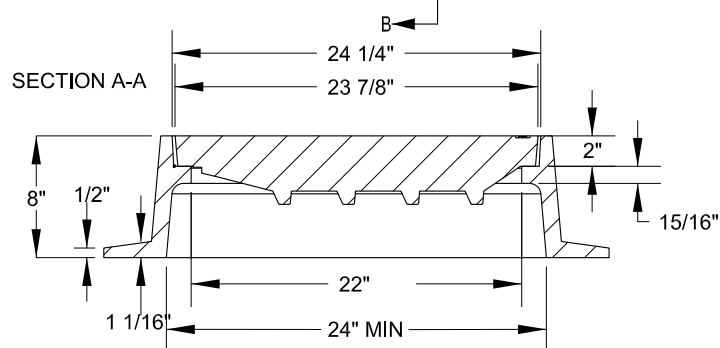
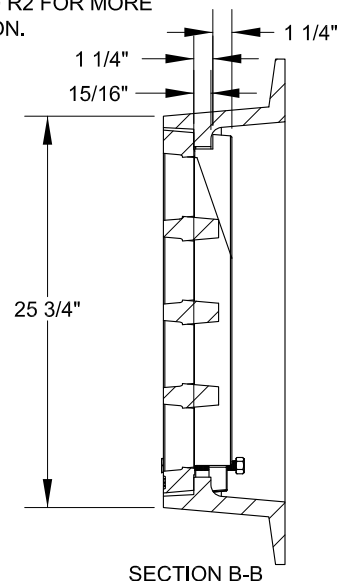
TYPE B-2
HOOK LOCK CASCADE GRATE
FLOW FROM RIGHT

DATE OF ISSUE
June 2009

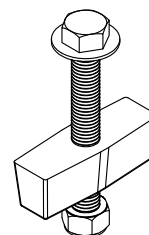
DRAWING NUMBER
201.7.1R



FRAME MAY BE INSTALLED
WITH THIS FLANGE REMOVED
FOR CURB INLET. FOUR
FLANGE IS SHOWN. ~ SEE
DWG 201.6.0 R2 FOR MORE
INFORMATION.



AASHTO HS 20 PROOF LOAD



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:

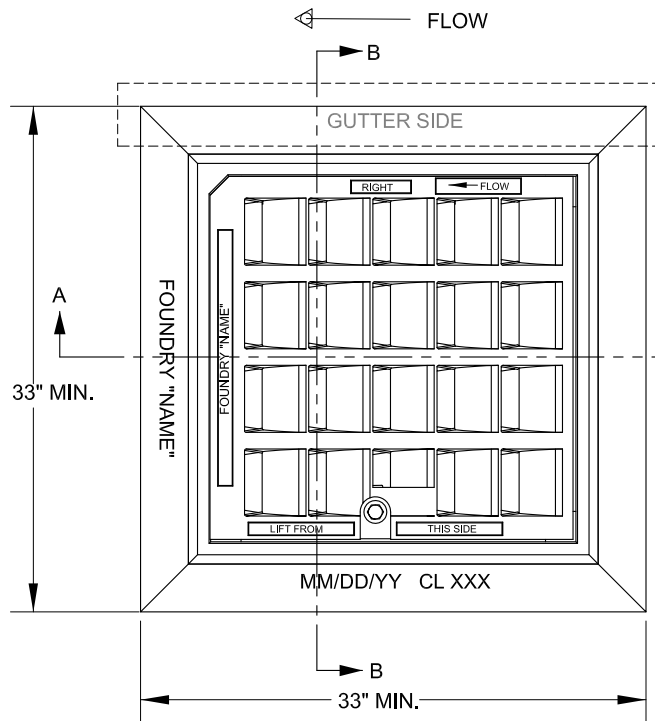
3-FLANGE FRAME	240 LBS. MIN
4-FLANGE FRAME	270 LBS. MIN
B-1 GRATE	265 LBS. MIN

CASTING TOLERANCES:

SHALL CONFORM TO AASHTO
M306

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

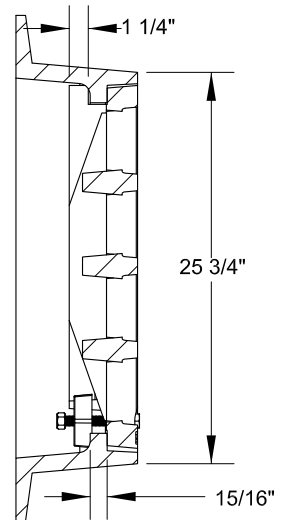
NOTE: IDENTIFYING INFORMATION SHOWN ON FRAMES & GRATES TO
BE CAST WITH FRAME AND GRATE



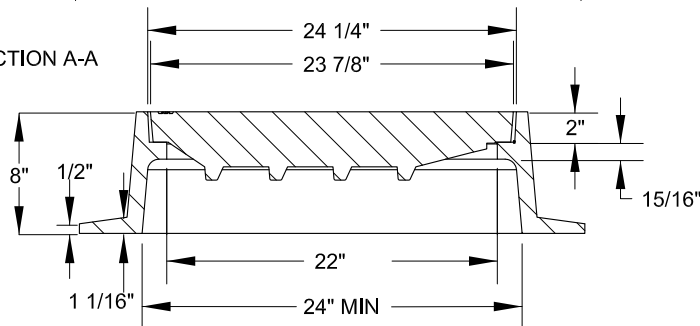
FRAME MAY BE INSTALLED WITH THIS FLANGE REMOVED FOR CURB INLET. FOUR FLANGE IS SHOWN. ~ SEE DWG 201.6.0 R2 FOR MORE INFORMATION.

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

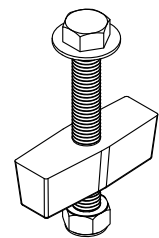
AASHTO HS 20 PROOF LOAD
N.T.S.



SECTION A-A



SECTION B-B



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:

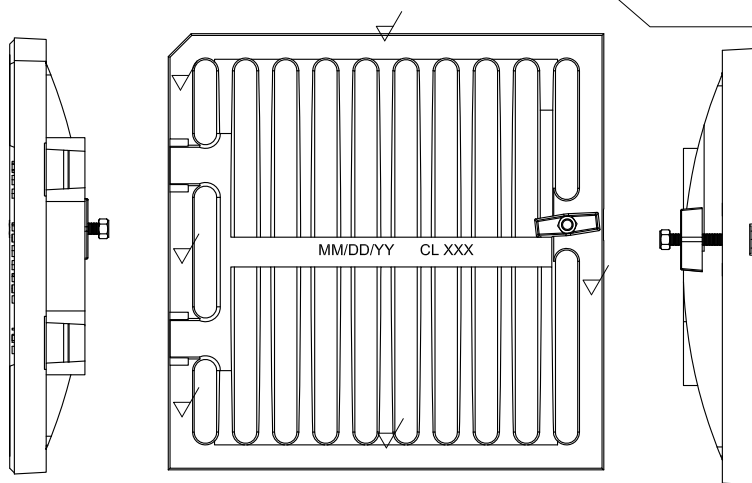
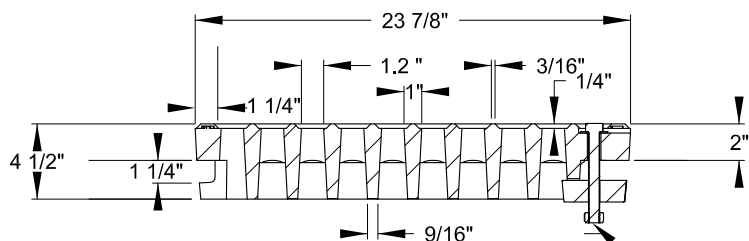
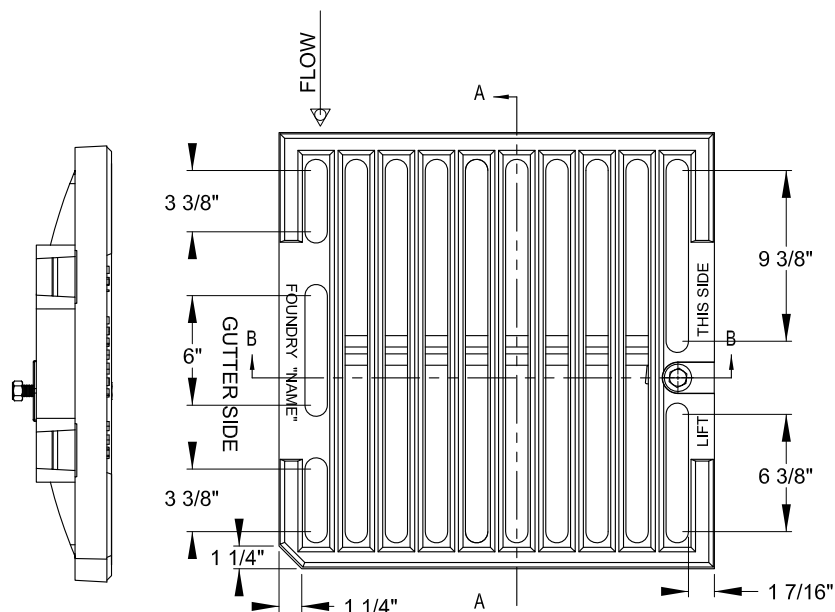
3-FLANGE FRAME	240 LBS. MIN
4-FLANGE FRAME	270 LBS. MIN
B-2 GRATE	265 LBS. MIN

CASTING TOLERANCES:

SHALL CONFORM TO AASHTO
M306

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:
SHALL CONFORM TO AASHTO
M306

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.

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

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

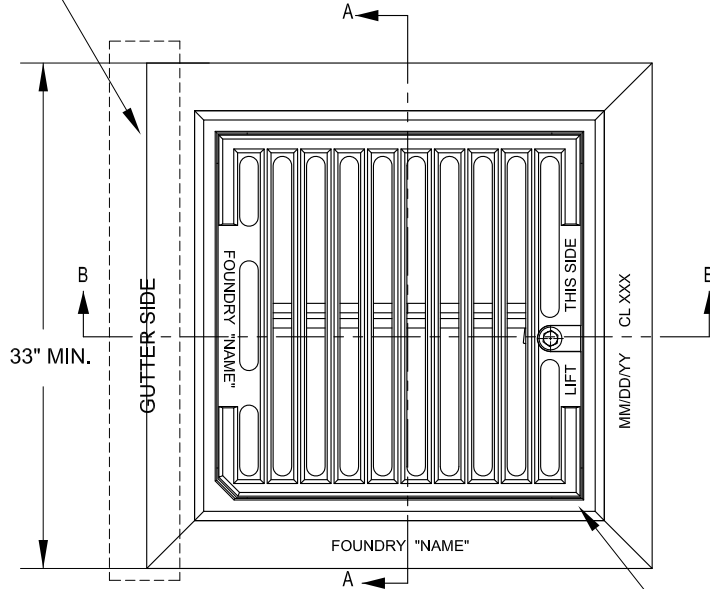
CLASSIFICATION:
ASTM A48 CLASS 30B GRAY CAST IRON
WITH NO BLACK ASPHALT COATING
ALLOWED

Machine tolerances:

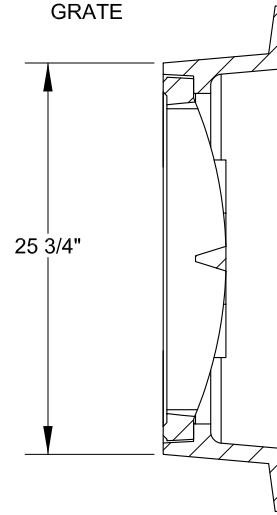
Surfaces noted ∇ must
be machined flat and
in-plane within .010"
Total Indicator Reading

NOTE: BAR GRATE NOT TO BE USED ON
FACILITIES WHERE BICYCLE TRAVEL IS
LEGALLY ALLOWED.

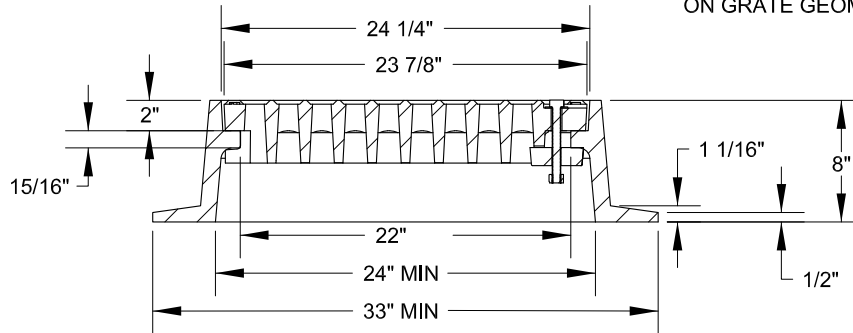
FRAME MAY BE INSTALLED WITH THIS FLANGE REMOVED FOR CURB INLET. FOUR FLANGE IS SHOWN. SEE DWG 201.6.0 R2 FOR MORE INFORMATION.



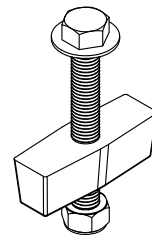
NOTE: IDENTIFYING INFORMATION SHOWN ON FRAMES & GRATES TO BE CAST WITH FRAME AND GRATE



SEE DWG # FOR MORE INFORMATION ON GRATE GEOMETRY.



N.T.S.

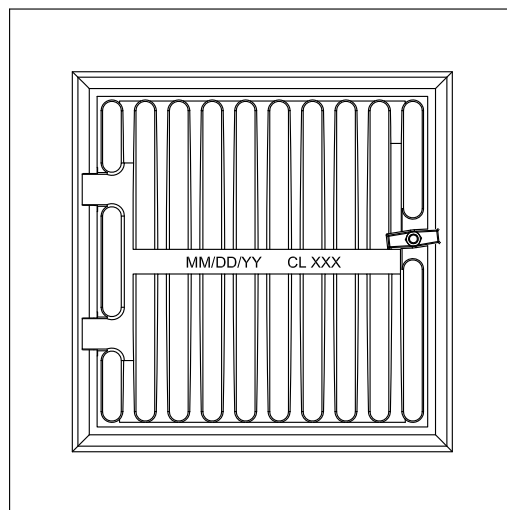


LOCK TUMBLER ASSEMBLY
(1) REQUIRED-CONSISTS OF:

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5/8" ST. STL. FLAT WASHER
CAST IRON TUMBLER
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STAINLESS STEEL GRADE 304

AASHTO
HS 20
PROOF
LOAD



CASTING TOLERANCES:
SHALL CONFORM TO AASHTO
M306

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.

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A-4 GRATE	205 LBS. MIN