

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The following Standard Construction Drawings issued January 16, 2009, are superseded by the corresponding drawings listed above, effective immediately: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

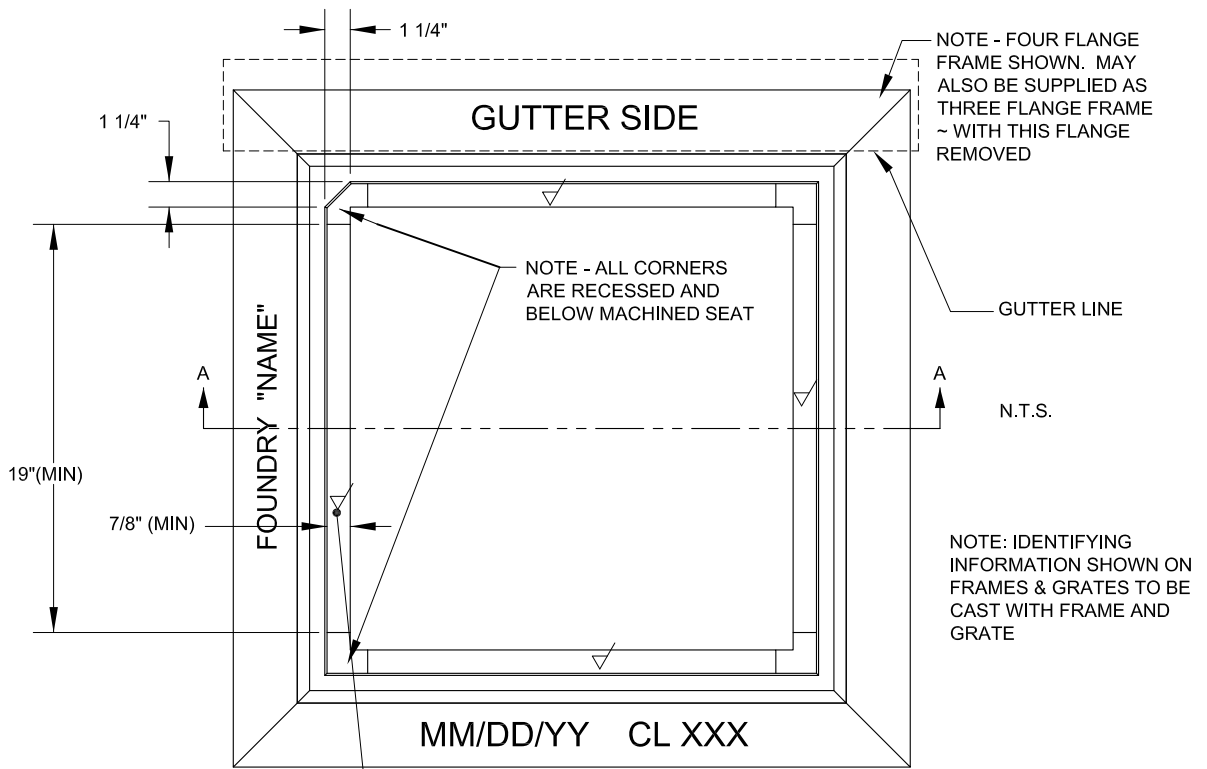
- Hook Lock Grates shall be used as the standard catch basin grates on MassHighway facilities. Catch Basin Frames as shown in the attached Drawings are machined to ensure a non-rocking fit and must be used with each Hook Lock Grate.

- 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

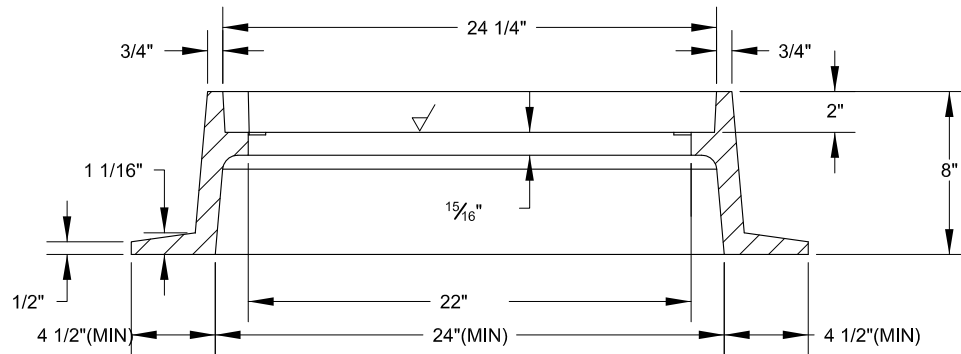
Post: _____

Do Not Post: X



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

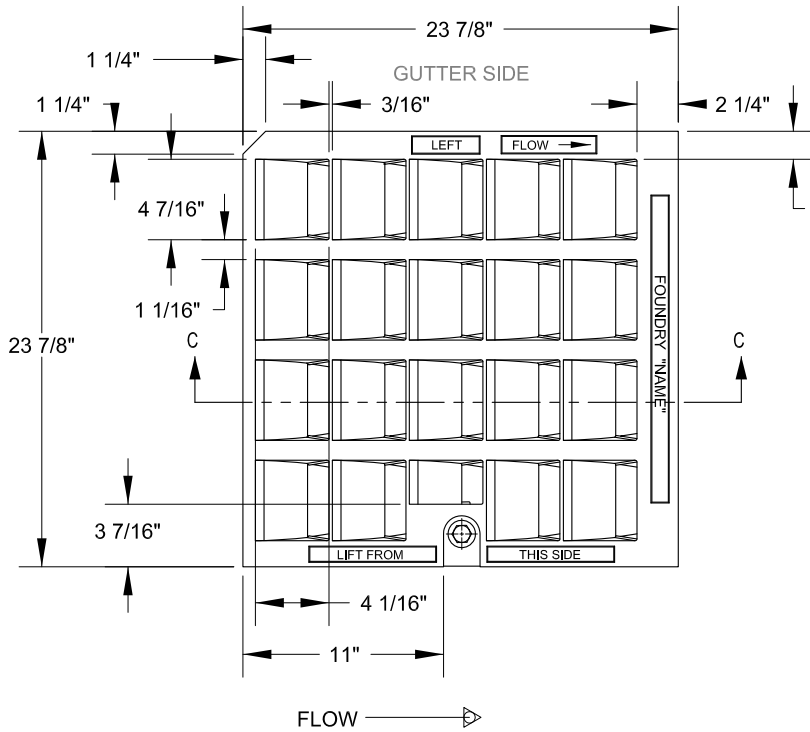
CLASSIFICATION:
ASTM A48 CLASS 30B GRAY CAST IRON
 WITH NO BLACK ASPHALT COATING ALLOWED



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

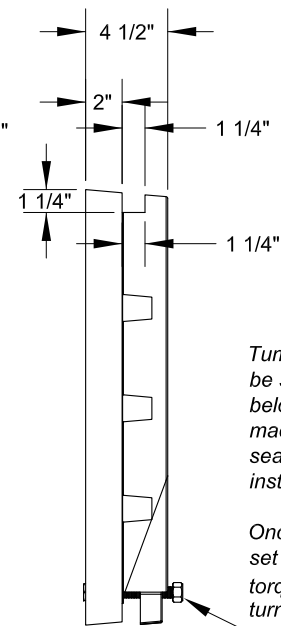
AASHTO HS 20 LOAD RATED

CASTING TOLERANCES:
 SHALL CONFORM TO AASHTO
 M306



END VIEW

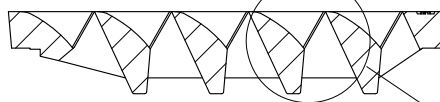
N.T.S.



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.

SECTION C-C

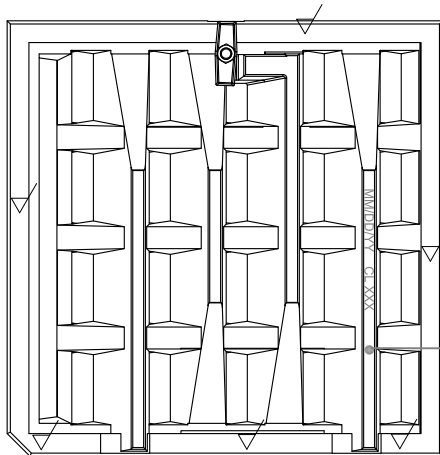


LOCK TUMBLER ASSEMBLY
(1) REQUIRED-CONSISTS OF:

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

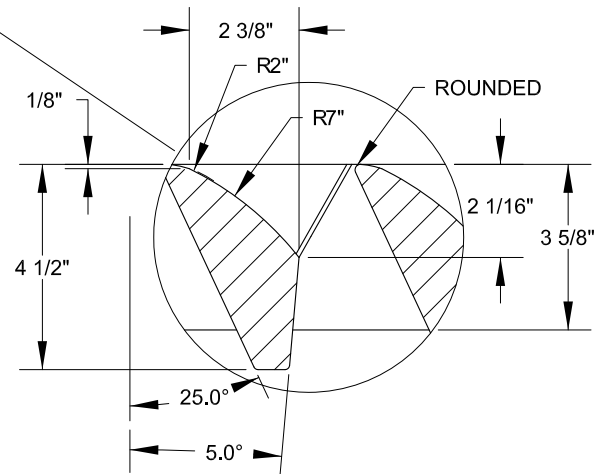


WEIGHT: 265 LBS. MIN
AASHTO HS 20 PROOF LOAD

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

Machine tolerances:

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



CASTING TOLERANCES:
SHALL CONFORM TO AASHTO
M306

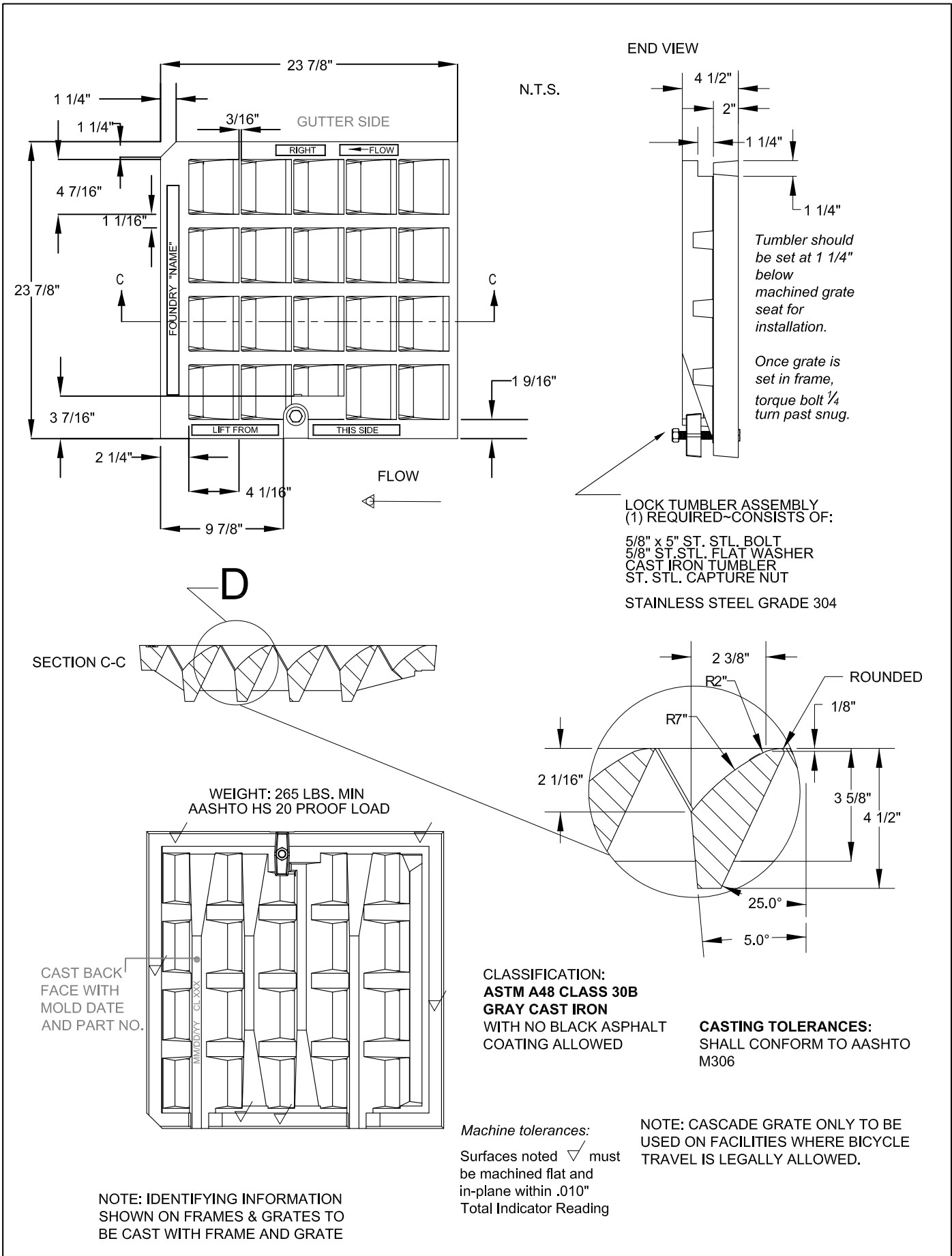
NOTE: CASCADE GRATE ONLY TO BE
USED ON FACILITIES WHERE BICYCLE
TRAVEL IS LEGALLY ALLOWED.

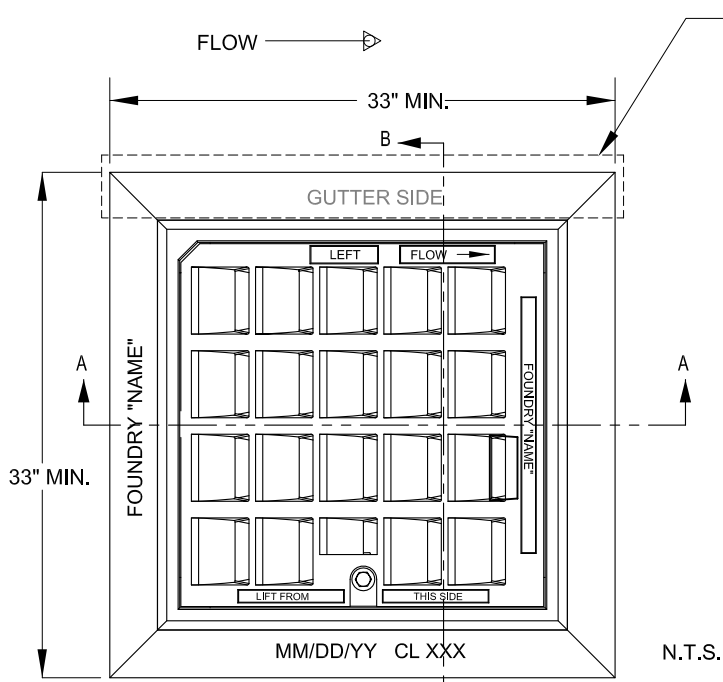
MASS HIGHWAY
CONSTRUCTION
STANDARDS

TYPE B-1
HOOK LOCK CASCADE GRATE
FLOW FROM LEFT

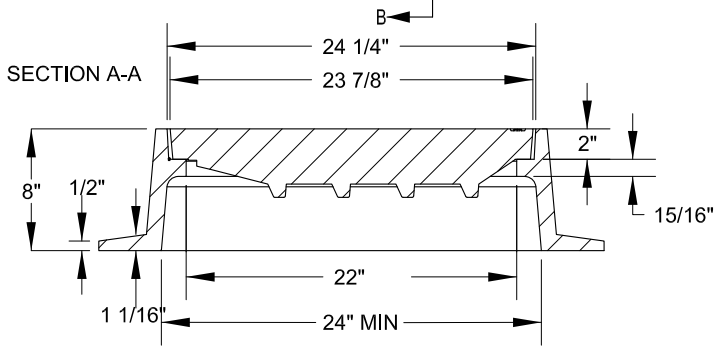
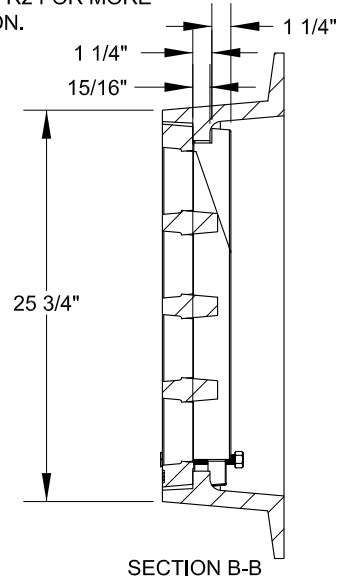
DATE OF ISSUE
June 2009

DRAWING NUMBER
201.7.0 R2

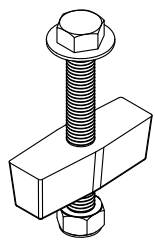




FRAME MAY BE INSTALLED WITH THIS FLANGE REMOVED FOR CURB INLET. FOUR FLANGE IS SHOWN. ~ SEE DWG 201.6.0 R2 FOR MORE INFORMATION.



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

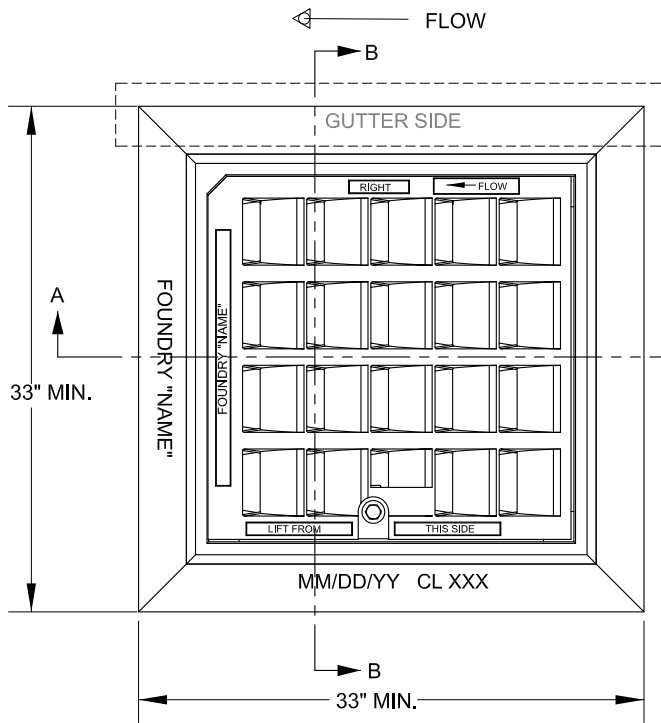
NOTE: SEAT SURFACES ON BOTH FRAME AND GRATE ARE MACHINED AND GRATE MUST NOT ROCK IN FRAME WHEN ASSEMBLED.

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



B-1 GRATE AND FRAME
 FLOW FROM LEFT
 ASSEMBLY DETAILS

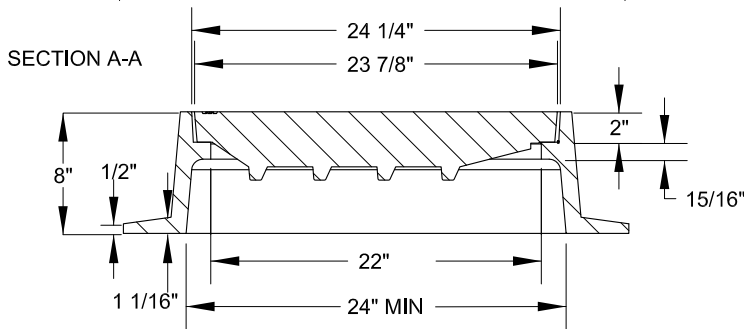
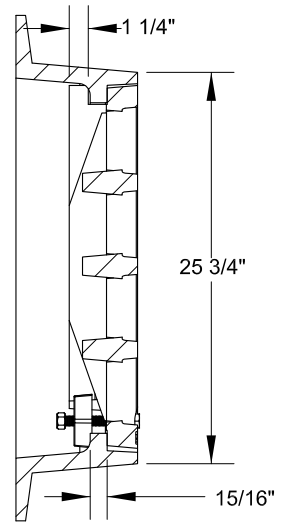
DATE OF ISSUE
 June 2009
 DRAWING NUMBER
201.9.0 R2



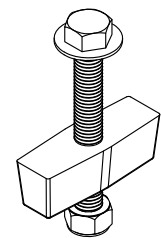
FRAME MAY BE INSTALLED WITH THIS FLANGE REMOVED FOR CURB INLET. FOUR FLANGE IS SHOWN. ~ SEE DWG 201.6.0 R2 FOR MORE INFORMATION.

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

AASHTO HS 20 PROOF LOAD
 N.T.S.



SECTION 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.

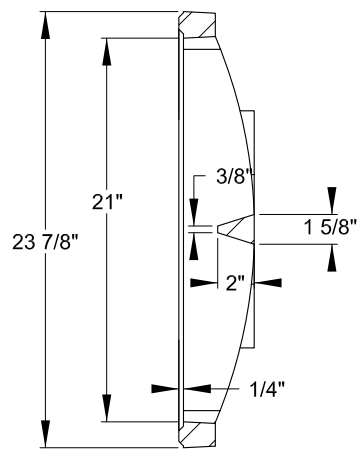
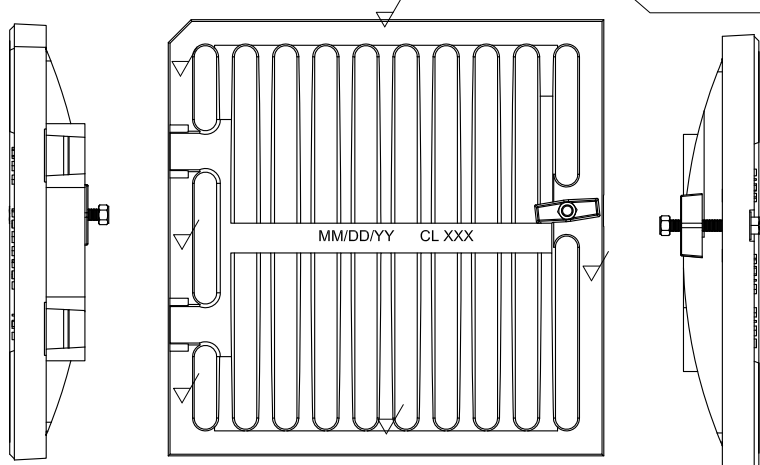
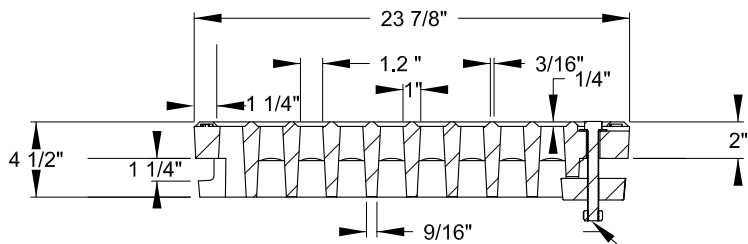
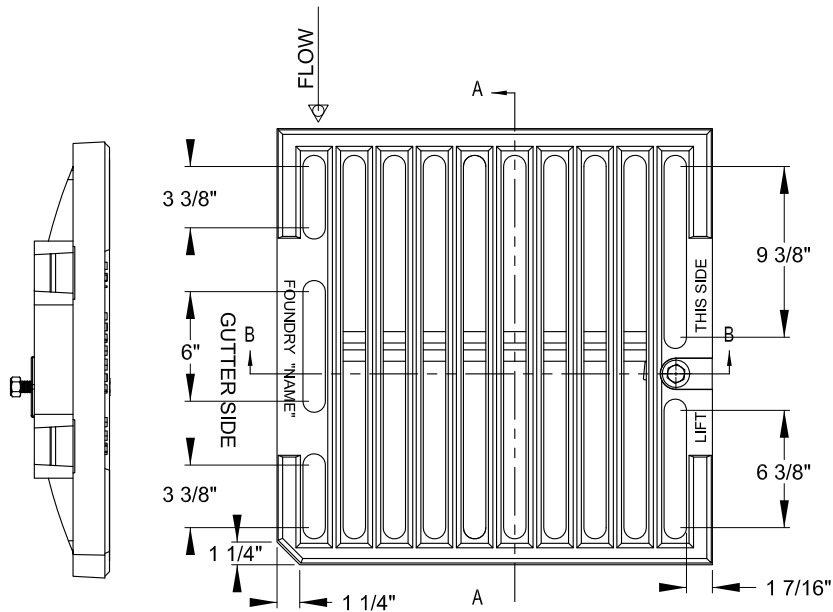
NOTE: IDENTIFYING INFORMATION SHOWN ON FRAMES & GRATES TO BE CAST WITH FRAME AND GRATE



B-2 GRATE AND FRAME
 FLOW FROM RIGHT
 ASSEMBLY DETAILS

DATE OF ISSUE
 June 2009

DRAWING NUMBER
201.9.1R



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

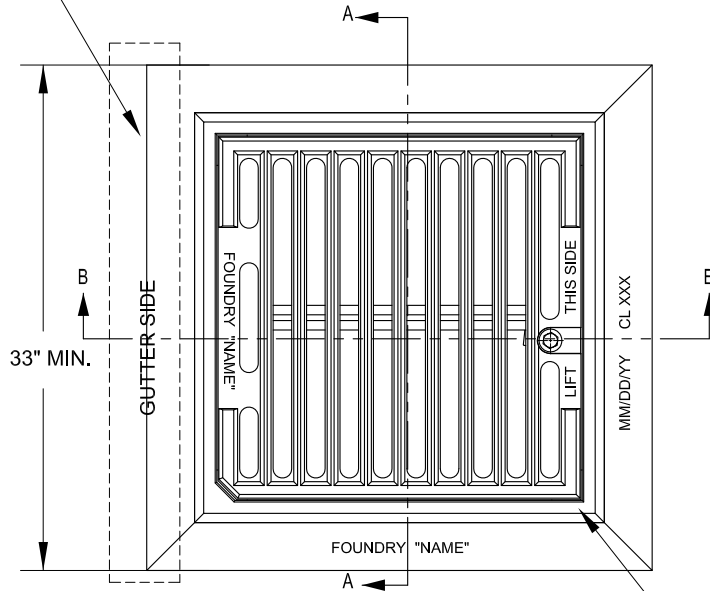
CASTING TOLERANCES:
 SHALL CONFORM TO AASHTO
 M306

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

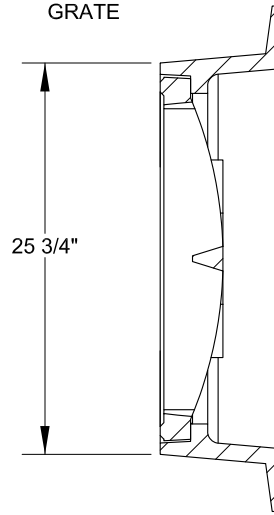
Once grate is set in frame, torque bolt 1/4 turn past snug.

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

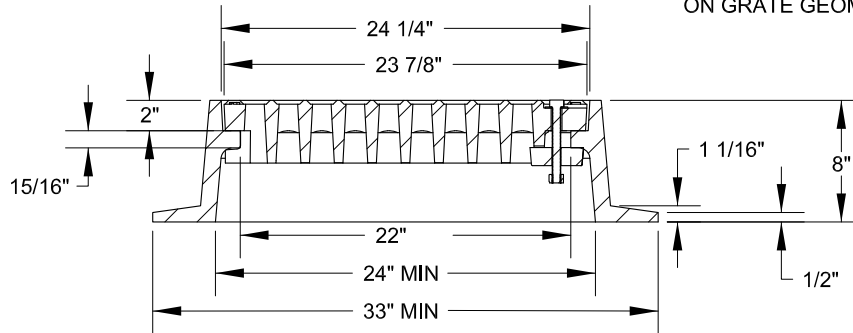
FRAME MAY BE INSTALLED WITH THIS FLANGE REMOVED FOR CURB INLET. FOUR FLANGE IS SHOWN. SEE DWG 201.6.0 R2 FOR MORE INFORMATION.



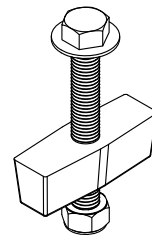
NOTE: IDENTIFYING INFORMATION SHOWN ON FRAMES & GRATES TO BE CAST WITH FRAME AND GRATE



SEE DWG # FOR MORE INFORMATION ON GRATE GEOMETRY.



N.T.S.

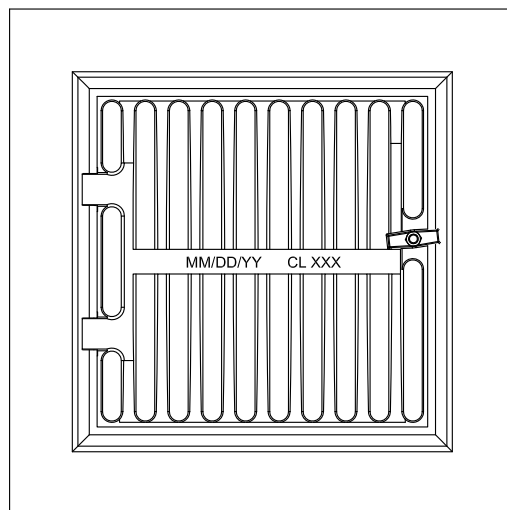


LOCK TUMBLER ASSEMBLY (1) REQUIRED-CONSISTS OF:

- 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:
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.

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
A-4 GRATE	205 LBS. MIN



TYPE A-4 HOOK LOCK BAR GRATE AND FRAME ASSEMBLY DETAILS

DATE OF ISSUE
June 2009

DRAWING NUMBER
201.10.1R