HINGE DETAIL
(HINGED AREA OPENS FOR CLEANOUT)

NOTE: LOCK DETAIL SIMILAR EXCEPT GAL. MACHINED BOLT WITH GALV. CUT WASHER & GALV. HEX NUTS OF REFERENCE STUD BOLT.

CROSSBAR

MACHINE BOLTS
5/8" DIA. [M16] GALV.

ANCHOR BOLTS ARE TO CONFORM TO AASHTO M 314 [314M] GRADE 36 [250 MPa].

UNIT GLACIAL MOVEMENTS ARE TO BE GALVANIZED.

WELD CROSSBARS TO 2 1/2" x 2 1/2" x 3/8" x 2'-1 1/2" L ANGLES HINGED AREA ONLY. SEE DTL. DWG. NO. 611-00 FOR CROSSBAR DETAIL.

FABRICATE ALL LIGHT DUTY CATTLE GUARD GRADES TO INCLUDE HINGED GRATES.

NOTES:
1. USE AN EVEN NUMBER OF STEEL CATTLE GUARD GRATES WHEN A CHAINED AREA IS REQUIRED.
2. ALL HOLE BOLTS AND WASHERS ARE TO BE GALVANIZED.
3. WEED CROSSBARS TO 2 1/2" x 2 1/2" x 3/8" x 2'-1 1/2" L ANGLES HINGED AREA ONLY. SEE DTL. DWG. NO. 611-00 FOR CROSSBAR DETAIL.
4. FABRICATE ALL LIGHT DUTY CATTLE GUARD GRADES TO INCLUDE HINGED GRATES.

NOTE: SEE DET. DWG. NO. 611-00 OR DWG. NO. 611-15 FOR BASE DETAILS.

NOTE: DWG. NO. 611-00 FOR BASE DETAILS.
FLAT BAR LAG PLATE
6 x 50 x 1065
1/4" x 2" x 3'-6" TYP. CAST IN FERRULE INSERT (TYP.)

3/4" [19] DIA. 4 1/2" [115] (TYP.) MANAGER (TYP.) DIRECTED BY PROJECT

FIELD PLACED RINGS VIA CHAIN HOIST AS DIRECTED BY PROJECT MANAGER (TYP.)

LENGTH VARIES SEE ELEVATION VIEW

TYP. CAST IN 1/4" x 2" x 3'-6" (6 x 50 x 1065) FLAT BAR LAG PLATE

OPTIONAL SPLICE CONNECTION

FIELD PLACED RINGS VIA CHAIN HOIST AS DIRECTED BY PROJECT MANAGER (TYP.)

PLATES (TYP.) LAG

36' [10.8 m] CATTLE GUARD END SUPPORT DETAIL

END SUPPORT SECTION VIEW

NOTE:
METRIC CATTLE GUARD SIZES ARE NOMINAL. STANDARD HS20 LIVE LOADING IS RECOMMENDED FOR HEAVY-DUTY CATTLE GUARDS.

SEE DTL. DWG. NO. 611-15 FOR ADDITIONAL PRE-CAST CONCRETE CATTLE GUARD BASE AND MATERIAL QUANTITY DETAILS.

OPTIONAL SPLICE CONNECTION

SEE DTL. DWG. NO. 611-20 FOR ADDITIONAL PRE-CAST CONCRETE CATTLE GUARD BASE AND MATERIAL QUANTITY DETAILS.

INSTALLATION PROCEDURE:
EXCAVATE 2' (610) BELOW THE ELEVATION OF THE BOTTOM OF THE CATTLE GUARD BASE. EXCAVATE Horizontally AT LEAST 1'-0" (300) IN ALL DIRECTIONS DURING THE CATTLE GUARD BASE EXTENSION DIMENSION.

FILL THE EXCAVATION TO GRADE WITH THE SAME MATERIAL.

FILL THE EXTRAPOLATION OF THE CATTLE GUARD BASE TO A DEPTH OF 1'-0" (300) WITH THE SIMILARLY COMPACTED MATERIAL.

HEAVY DUTY CATTLE GUARD - PRECAST

MONTANA DEPARTMENT OF TRANSPORTATION