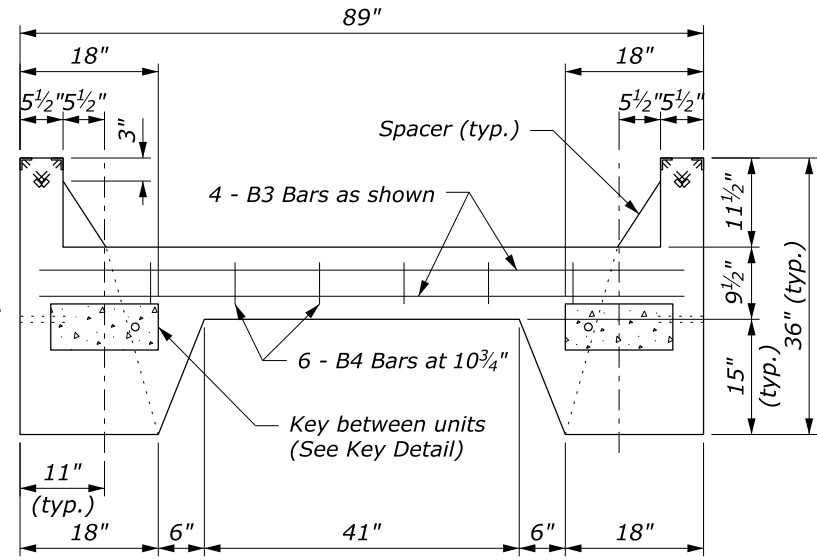
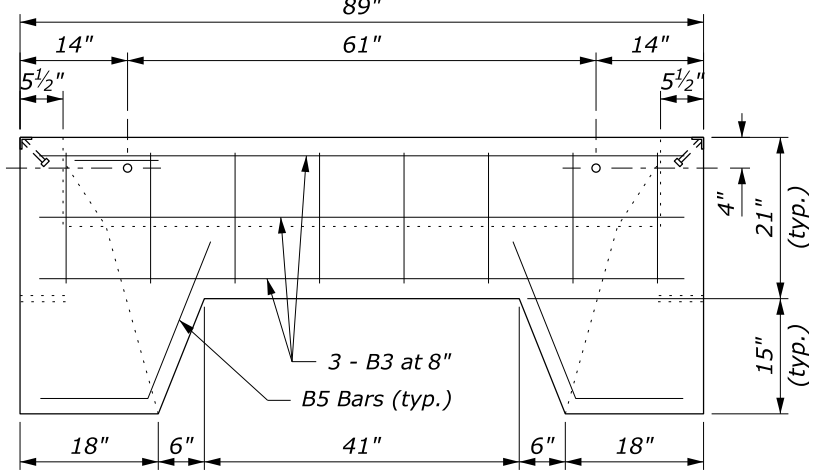


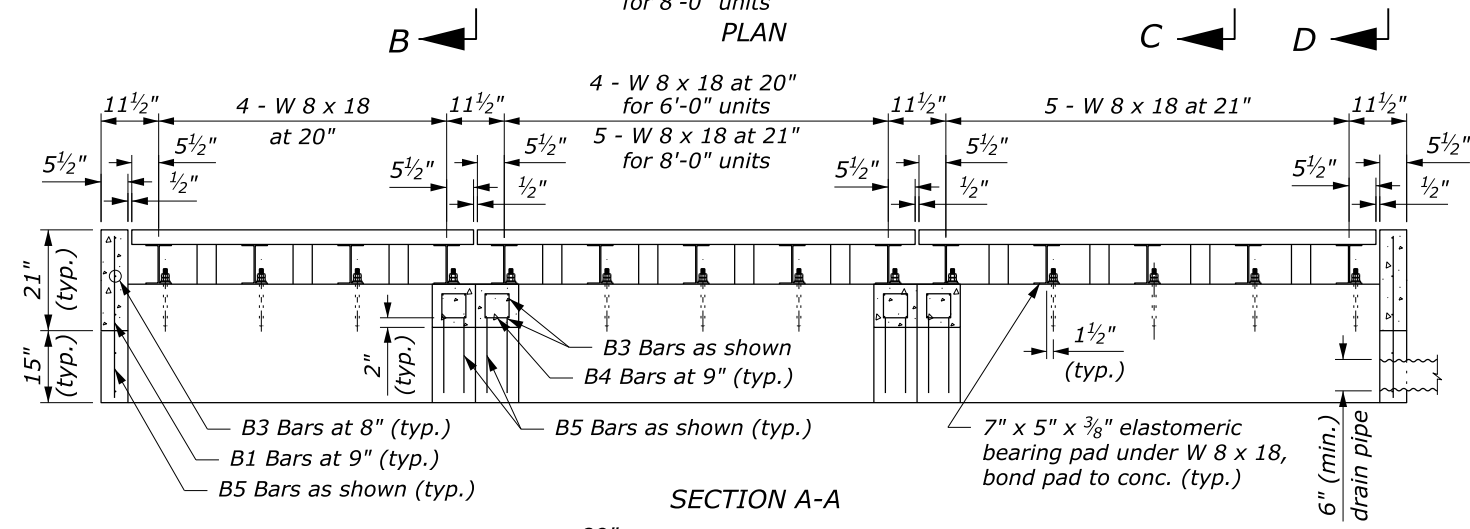
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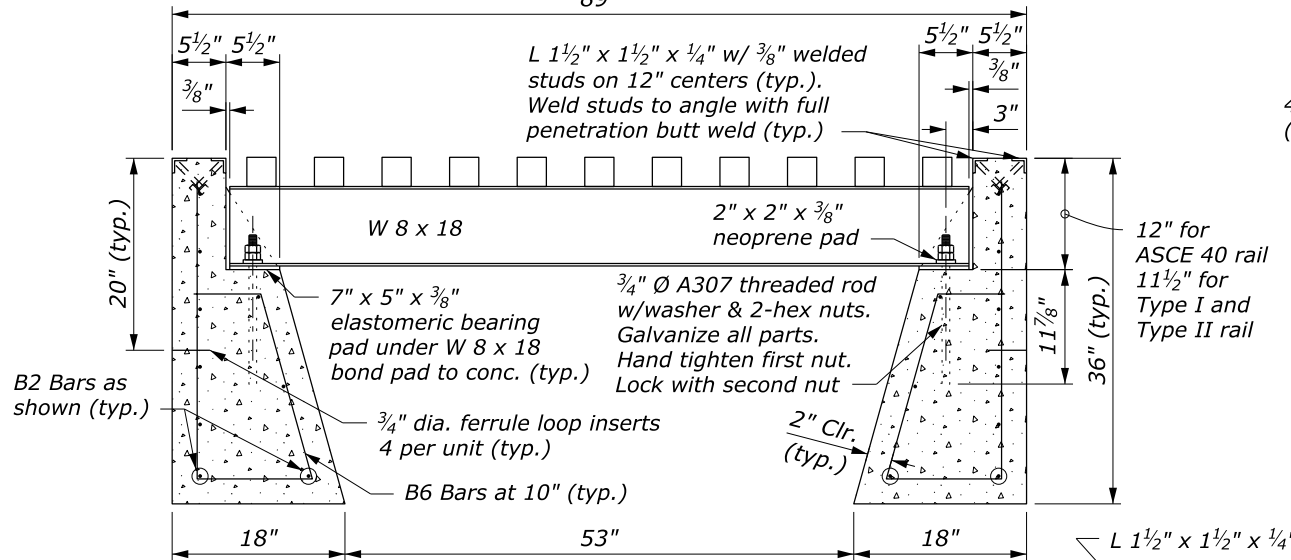
SECTION B-B



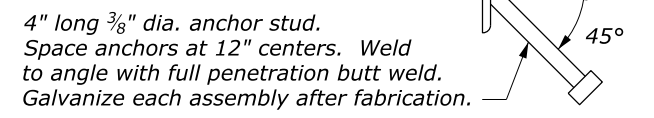
SECTION D-D



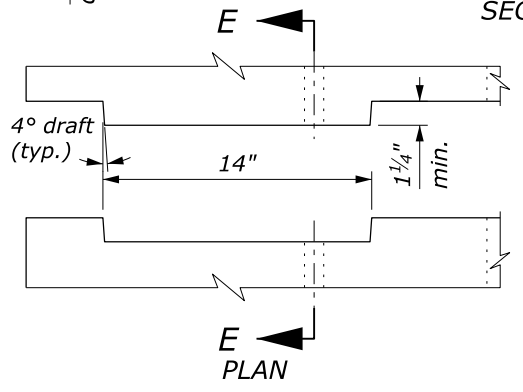
SECTION A-A



SECTION C-C

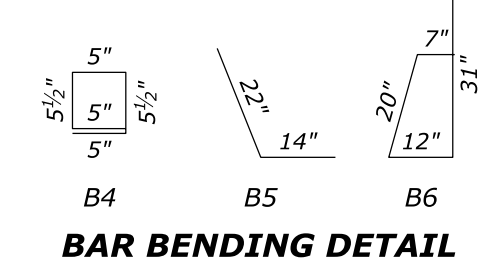


GUARD ANGLE DETAIL

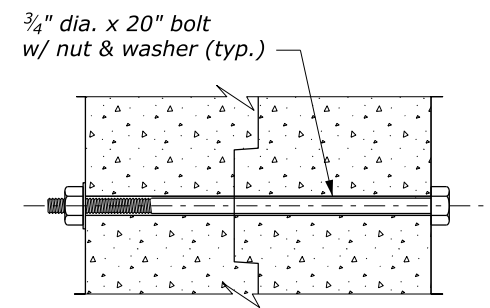


ELEVATION

KEY DETAIL



BAR BENDING DETAIL



SECTION E-E

NO SCALE

**NOTE:**

1. See Standard 619-1 for reinforcing steel size and grade.
2. See Standard 619-1 and 2 for cattle guard wing details. Fabricate end units to accommodate selected cattle guard wing.
3. Minimum soil bearing 4,000 lb/ft<sup>2</sup>. Place units in fine aggregate bed 3-inch thick over hand leveled soil compacted to not less than 95% density.
4. Chamfer exposed concrete edges 3/4" unless otherwise shown. Give all concrete surfaces a Class 1 finish.
5. Approved alternate designs may be used.

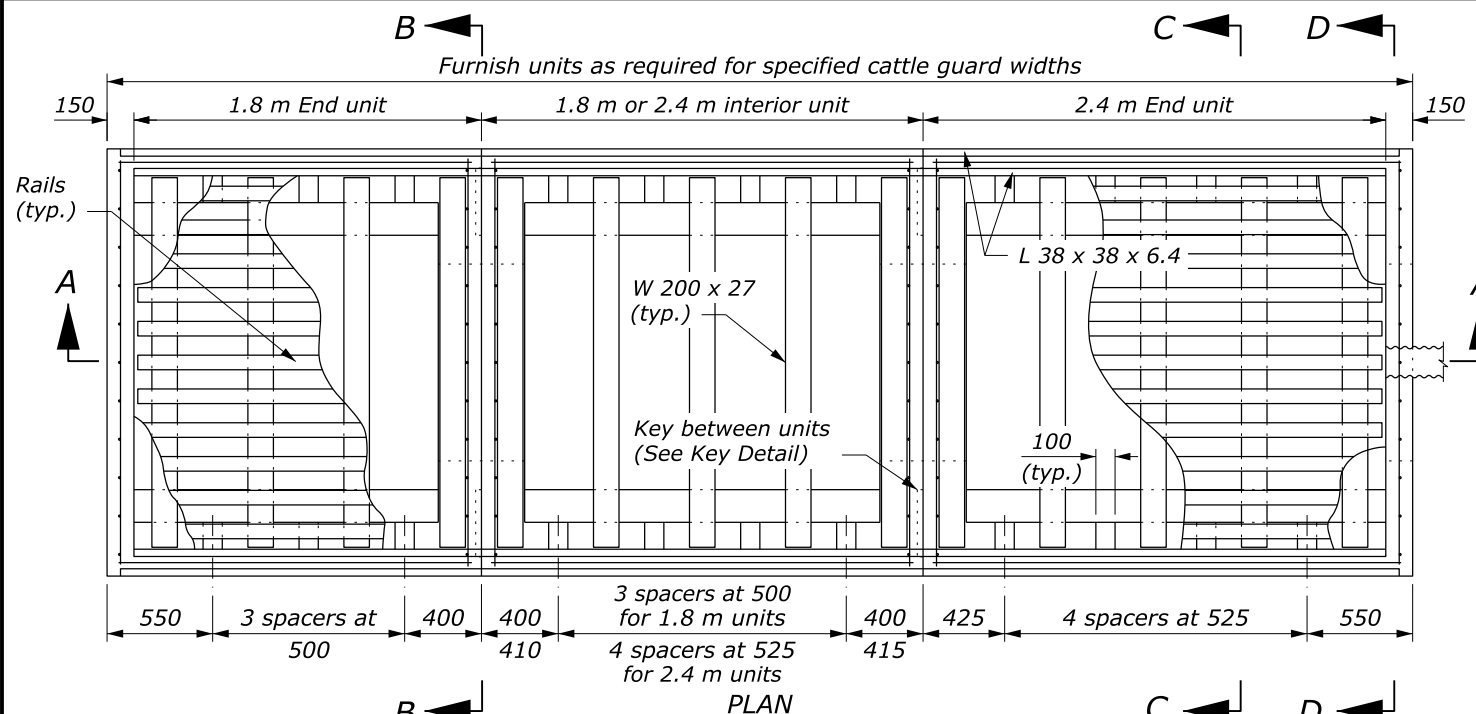
**PRECAST CATTLE GUARD**

REINFORCING STEEL AND CONCRETE					
UNIT	No. of BARS	BAR MARK	LENGTH	MASS LB	CONCRETE CUYD
6'-0" END	7	B3	85"	33.1	1.89
	10	B2	74"	41.2	
	8	B1	17"	7.6	
	6	B4	26"	8.7	
	18	B6	70"	70.1	
6'-0" INTERIOR	6	B5	36"	12.0	1.90
	8	B3	85"	37.9	
	10	B2	68"	37.9	
	12	B4	26"	17.4	
	18	B6	70"	70.1	
8'-0" INTERIOR	8	B5	36"	16.0	2.34
	8	B3	85"	37.9	
	10	B2	92"	51.2	
	12	B4	26"	17.4	
	20	B6	70"	77.9	
8'-0" END	8	B5	36"	16.0	2.32
	7	B3	85"	33.1	
	10	B2	98"	54.6	
	8	B1	17"	7.6	
	20	B6	70"	77.9	
	6	B4	26"	8.7	
	6	B5	36"	12.0	

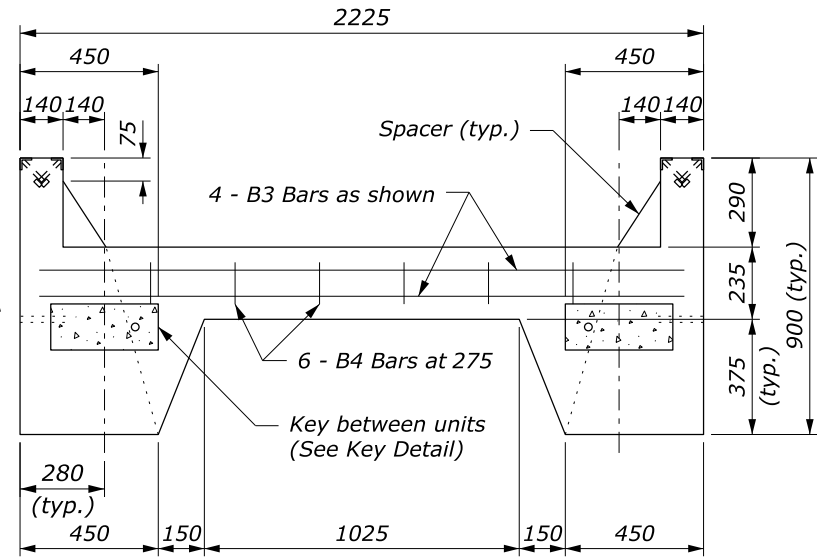
U.S. DEPARTMENT OF TRANSPORTATION, FHWA  
OFFICE OF FEDERAL LANDS HIGHWAY

**CATTLE GUARD  
PRECAST FOUNDATION**

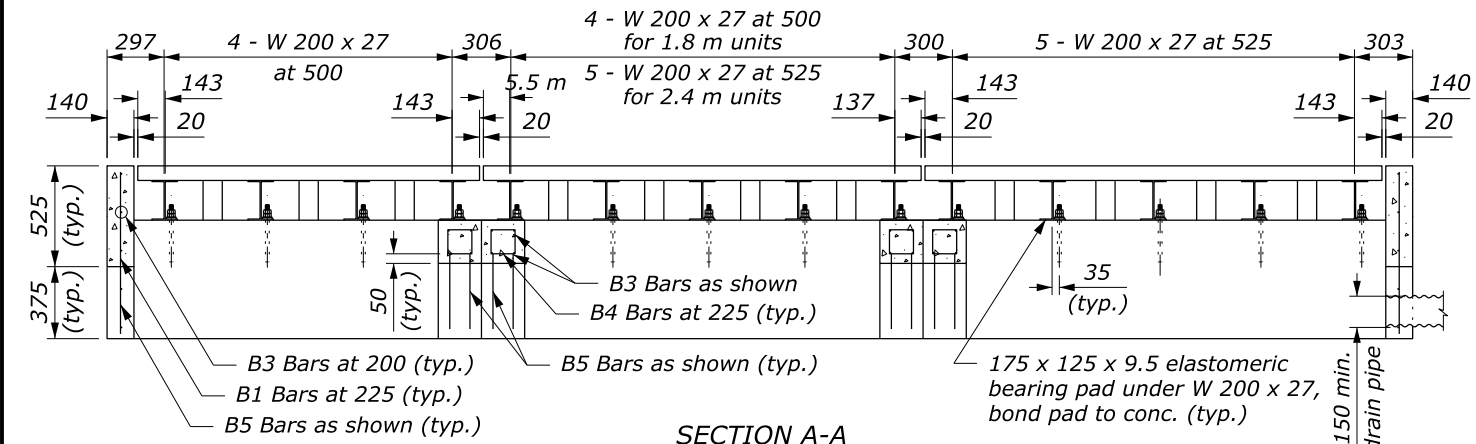
FLH STANDARD  
619-3  
SPECIFICATION  
FP-24, FP-14  
APPROVED FOR USE  
1/2024



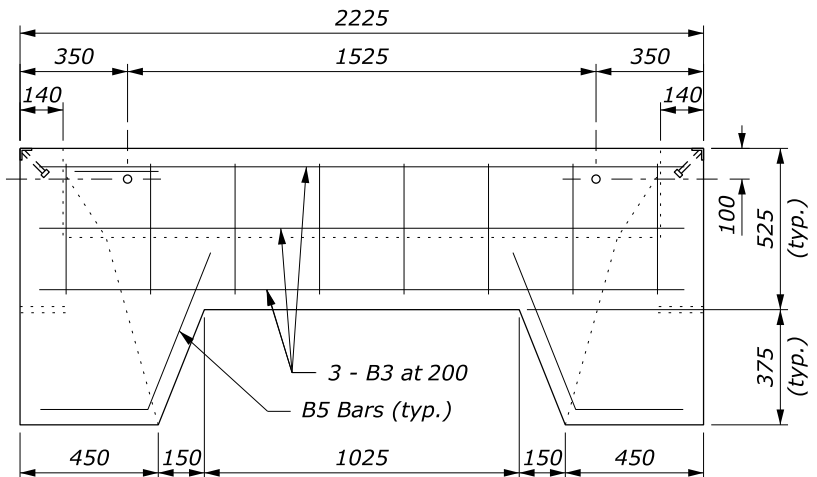
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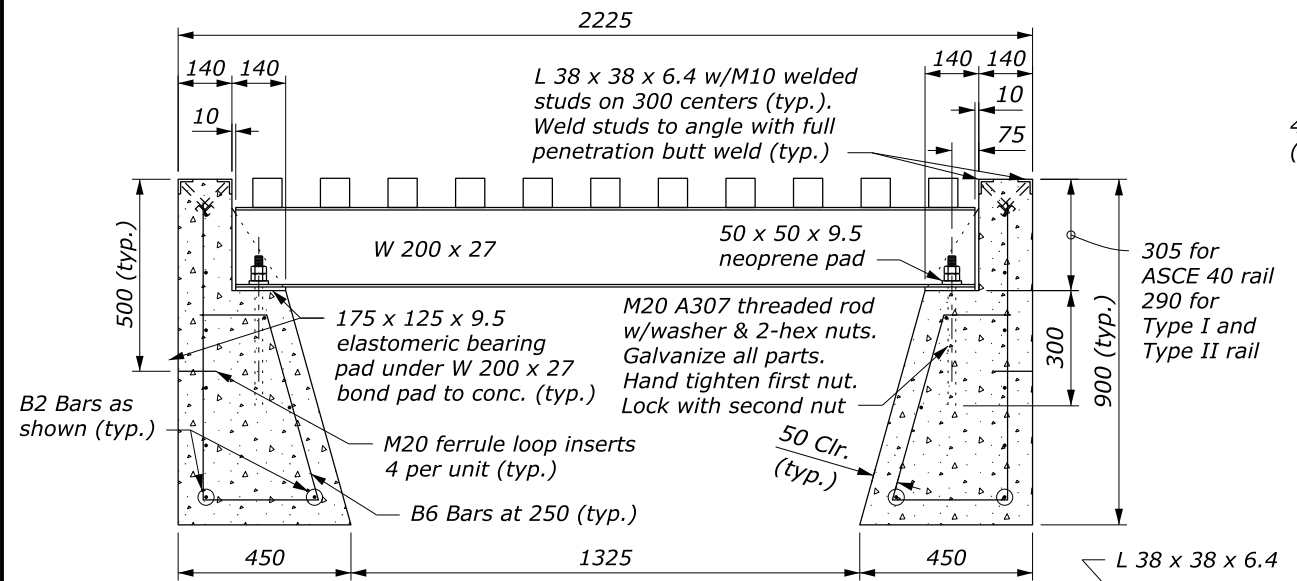
SECTION B-B



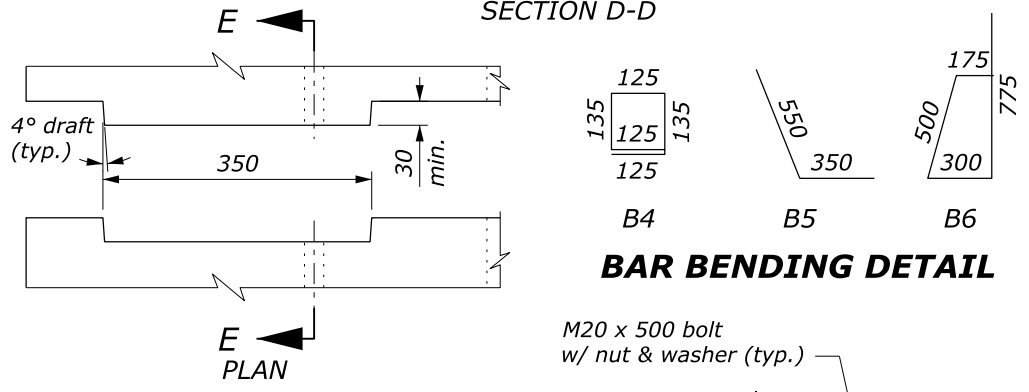
SECTION A-A



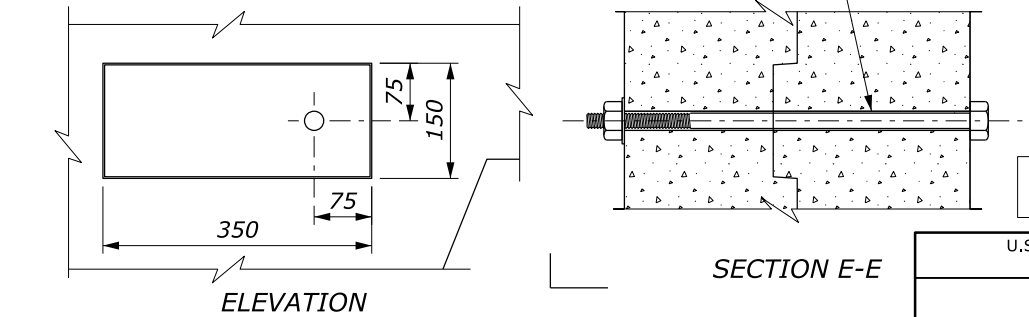
SECTION D-D



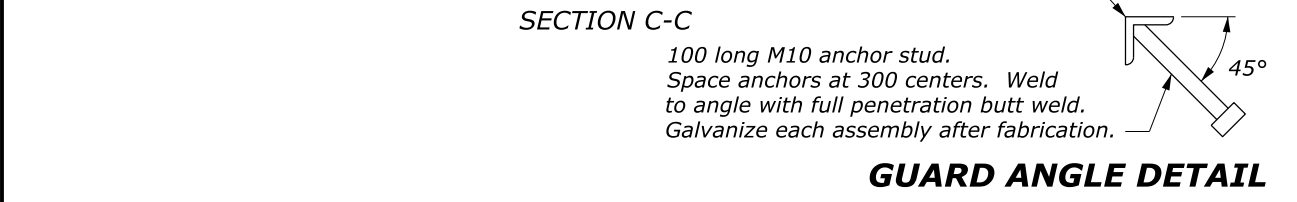
SECTION C-C



BAR BENDING DETAIL



KEY DETAIL



GUARD ANGLE DETAIL

**NOTE:**

1. See Standard M619-1 for reinforcing steel size and grade.
2. See Standard M619-1 and 2 for cattle guard wing details. Fabricate end units to accommodate selected cattle guard wing.
3. Minimum soil bearing 19,500 kg/m<sup>2</sup>. Place units in fine aggregate bed 75 mm thick over hand leveled soil compacted to not less than 95% density.
4. Chamfer exposed concrete edges 20 mm unless otherwise shown. Give all concrete surfaces a Class 1 finish.
5. Approved alternate designs may be used.

PRECAST CATTLE GUARD					
REINFORCING STEEL AND CONCRETE					
UNIT	No. of BARS	BAR MARK	LENGTH	MASS kg	CONCRETE m <sup>3</sup>
1.8 m END	7	B3	2100	14.6	1.40
	10	B2	1850	18.4	
	8	B1	425	3.4	
	6	B4	650	3.9	
	18	B6	1750	31.3	
1.8 m INTERIOR	6	B5	900	5.4	1.41
	8	B3	2100	16.7	
	10	B2	1650	16.4	
	12	B4	650	7.8	
	18	B6	1750	31.3	
2.4 m INTERIOR	8	B5	900	7.2	1.73
	8	B3	2100	16.7	
	10	B2	2250	22.4	
	12	B4	650	7.8	
	20	B6	1750	34.8	
2.4 m END	8	B5	900	7.2	1.72
	7	B3	2100	14.6	
	10	B2	2450	24.4	
	8	B1	425	3.4	
	6	B4	650	3.9	
	20	B6	1750	34.8	
	6	B5	900	5.4	

This drawing contains **Metric** units of measure. Dimensions without units are millimeters.

U.S. DEPARTMENT OF TRANSPORTATION, FHWA  
OFFICE OF FEDERAL LANDS HIGHWAY

FLH STANDARD  
M619-3

**CATTLE GUARD  
PRECAST FOUNDATION**

SPECIFICATION  
FP-24, FP-14

APPROVED FOR USE  
1/2024

NO SCALE