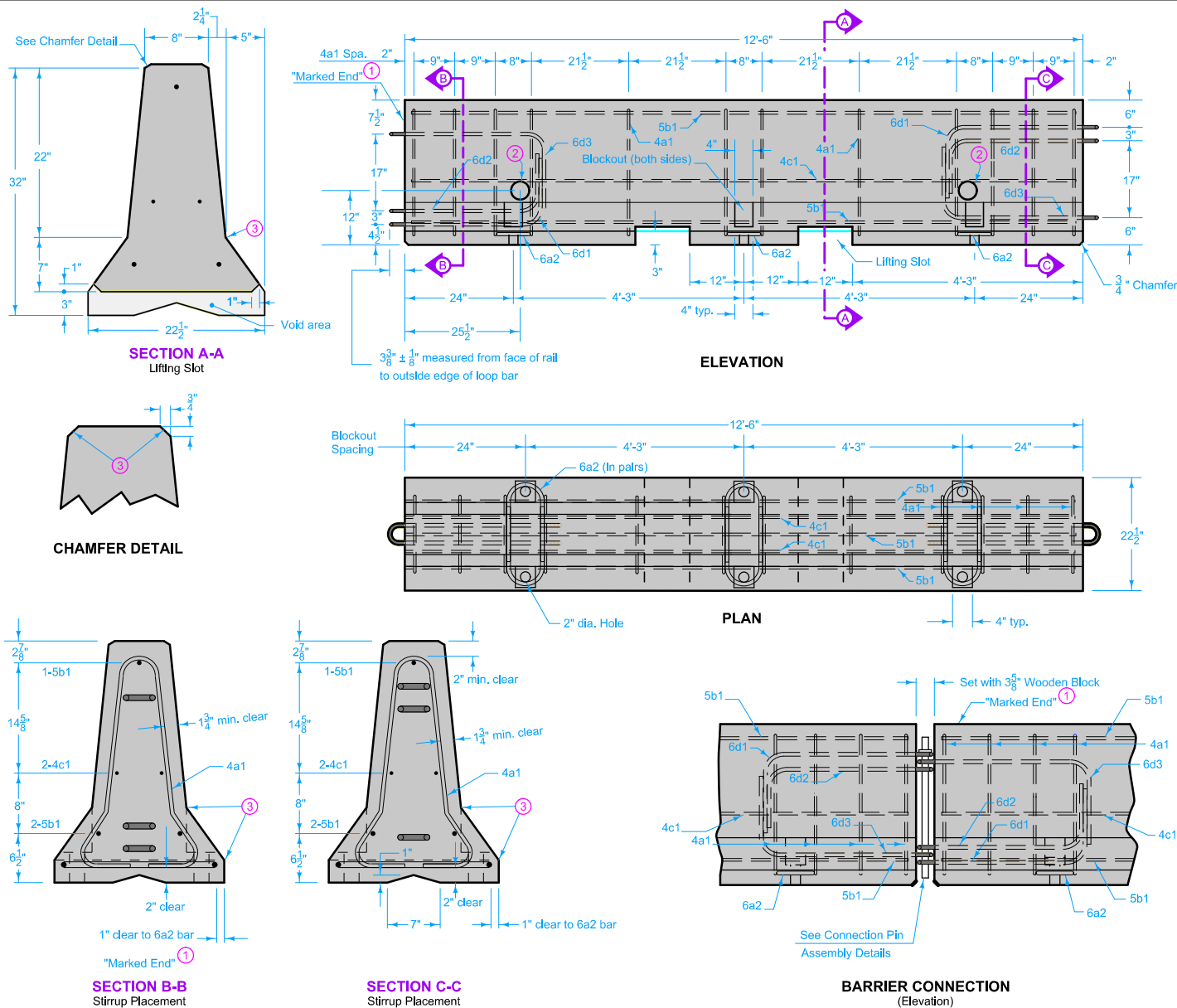




For loop bars 6d1, 6d2, and 6d3, use $\frac{3}{4}$ " smooth steel bars with a minimum yield strength of 60 ksi, a tensile strength of not less than 1.25 times the yield strength but a minimum of 80 ksi, a minimum 14% elongation in 8 inches, and passing a 180 degree bend test using a $3\frac{1}{2}$ " pin bend diameter.

Install loops within $\frac{1}{8}$ " of the plan dimensions.

Use Grade 60, ASTM A615 for all other reinforcements. Do not lift or move using loop bars 6d1, 6d2 or 6d3.

Provide for an approved monitoring schedule with a person on call and available 24 hours a day, each day of the week, to realign barrier which has been struck. Initiate service within one hour of notification of need.

Unless stated otherwise in the plans, the barrier rail sections shall be the property of the Contractor. Remove from the site upon completion of work.

Following removal of anchorage, fill all holes with an approved non-shrink grout.

Tapered end section is not designed for use within 30 feet of traffic on facilities with speed limits 55 mph or greater, nor within 10 feet of traffic on facilities with speed limits 40 mph to 50 mph.

Estimated quantity of concrete for one taper section is 0.6 cubic yards.

Include the cost of anchorage, when required in the price bid for "Temporary Barrier Rail, Concrete".

- 1 Permanently mark one end of each rail section with manufacturing information. The "marked end" is that end of the barrier having one loop bar at the top and two loop bars at the bottom. Include the following information in the marking:

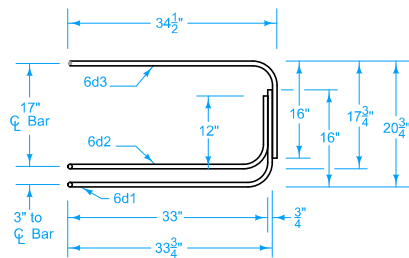
- Manufacturer Identification
- Date Manufactured (Month and Year)
- BA-401 Type A

- ② Lifting hole. 4 inch diameter PVC Pipe.
- ③ 1 inch radius allowed.

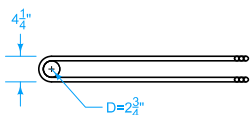
Possible Contract Item:
Temporary Barrier Rail, Concrete

Possible Tabulation:
108-33

 IOWA DOT	REVISION	
	3	04-20-21
STANDARD ROAD PLAN	BA-401	
	SHEET 1 of 4	
REVISIONS: Changed Obstacle to Object.		
		
APPROVED BY DESIGN METHODS ENGINEER		
TEMPORARY BARRIER RAIL (PRECAST CONCRETE)		

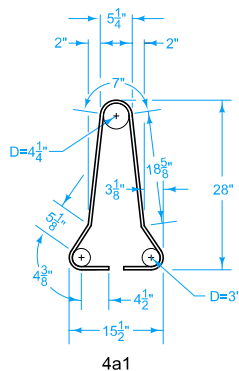


Elevation
(Marked end shown, invert for other end.)

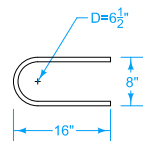


Plan
6d1, 6d2, 6d3

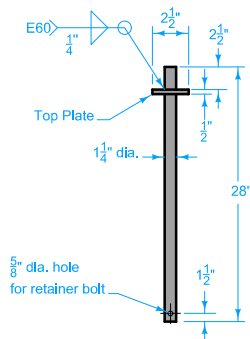
BENT BAR DETAILS
(Dimensions are out to out of bars unless otherwise noted.)



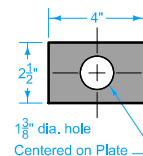
4a1



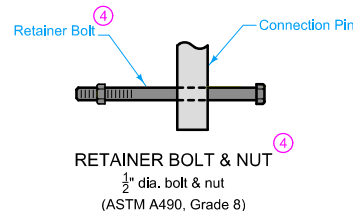
6a2



CONNECTION PIN
(A36 Steel - 10.9 lbs. each)



1/2" Top Plate

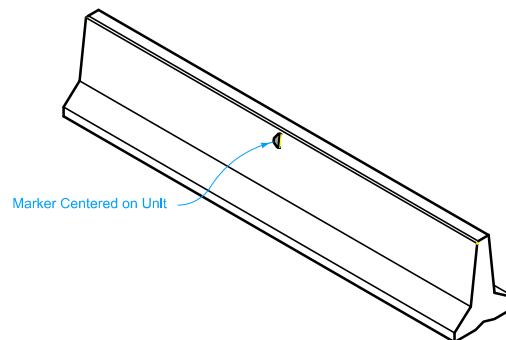
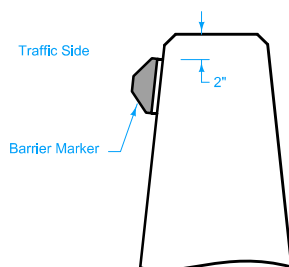


CONNECTION PIN ASSEMBLY

- ④ Retainer bolt & nut are required for connections with 2-loop barriers (previous designs) or in conjunction with Strap Anchorage.
- ⑤ Furnish and install Barrier Markers. Attach to the barrier in a manner approved by the manufacturer. Markers to face oncoming traffic and match the adjacent edge line in color. Maintain the markers and promptly repair or replace any damaged or missing units. Include costs for furnishing, installing and maintaining markers in the price bid for "Temporary Barrier Rail, Concrete."

Per 12'-6" Barrier Section

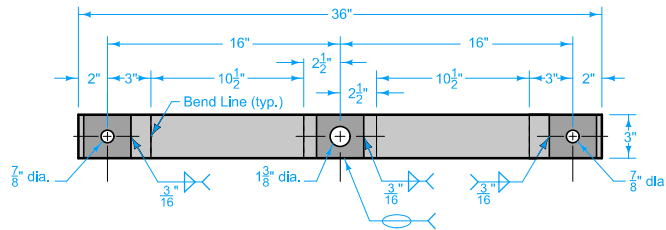
REINFORCING A615 Gr. 60					
Bar	Bar Size	Shape	No. of Bars	Length Ft.	Weight Lbs.
4a1	4		12	6'-0"	48.1
6a2	6		6	35"	26.3
5b1	5		3	12'-2"	38.1
4c1	4		2	12'-2"	16.3
LOOP ASSEMBLY					
6d1	6		2	8'-5"	25.3
6d2	6		2	7'-7"	22.8
6d3	6		2	8'-6"	25.5



BARRIER MARKER PLACEMENT

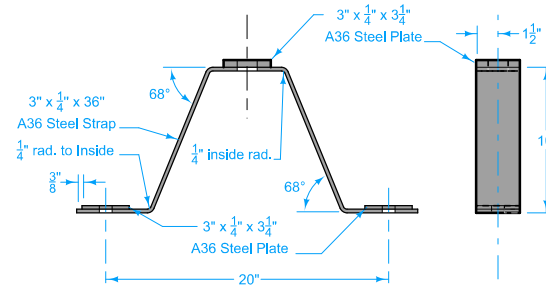
 STANDARD ROAD PLAN	REVISION 3 04-20-21	
	BA-401	
	SHEET 2 of 4	
REVISIONS: Changed Obstacle to Object...		
APPROVED BY DESIGN METHODS ENGINEER		
TEMPORARY BARRIER RAIL (PRECAST CONCRETE)		

STRAP ANCHORAGE

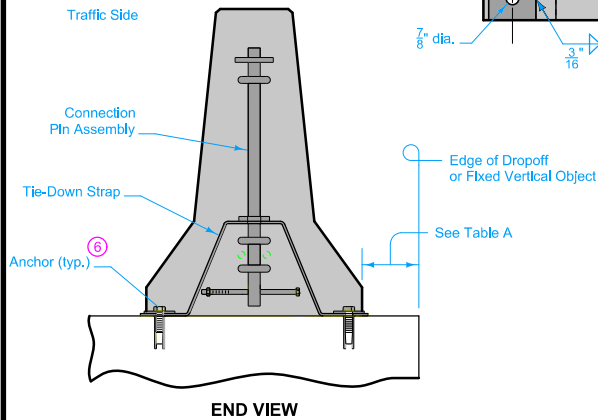


For use on:
Bridge Decks
PCC Pavement

TIE-DOWN STRAP (before bending)



TIE-DOWN STRAP (after bending)



STAKE ANCHORAGE

For use on:
HMA Pavement (2" min. thickness)
Composite Pavement
PCC Pavement

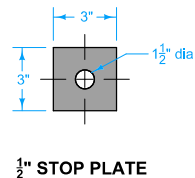
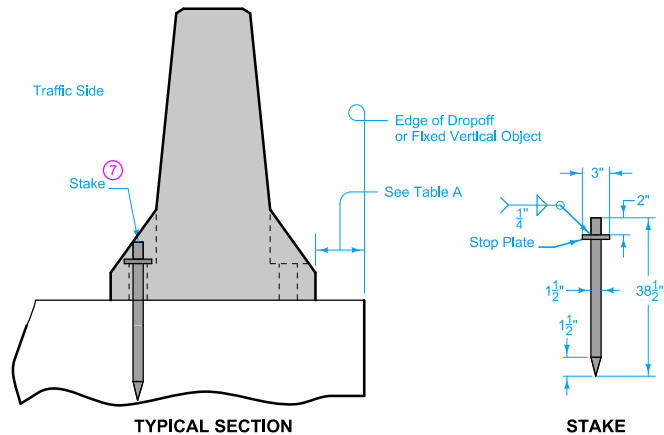


TABLE A
ANCHORAGE REQUIREMENTS

Object	Dropoff Depth	Min. offset where TBR is Unanchored	Min. offset where TBR is Anchored
Dropoff*	from pavement	≤ 24"	24"
	> 24"	45"	6"
Fixed vertical object	from bridge	≤ 3"	1"
	> 3"	45"	6"
Fixed vertical object	N/A	24"	6"

* A dropoff is a slope of 2H:1V or steeper

- ⑥ 3/4 inch Red Head Multi-Set II drop-in anchor with 3/4" dia. x 1 3/4" long ASTM A325 structural bolt OR Red Head Large Diameter Tapcon (3/4" dia. x 4 1/2" min.) OR Simpson Titen HD Wedge Bolt (3/4" dia. x 5" min.).
- ⑦ 3 stakes required per rail section.
- ⑧ Pre-drill holes for stakes with 1 5/8" core bit.

STANDARD ROAD PLAN

REVISIONS: Changed Obstacle to Object.

REVISION
3 04-20-21

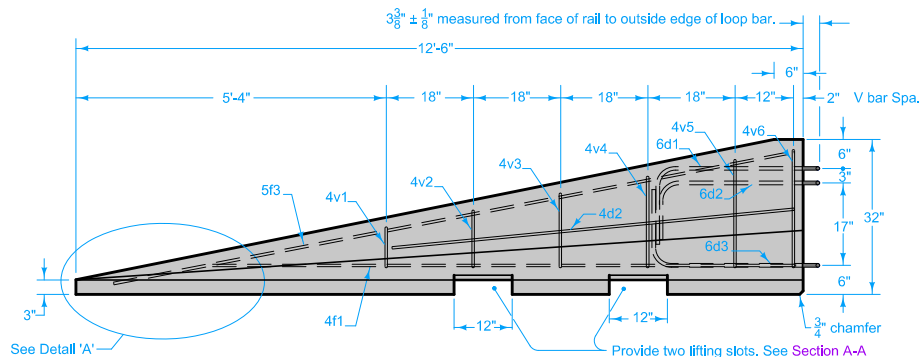
BA-401

SHEET 3 of 4

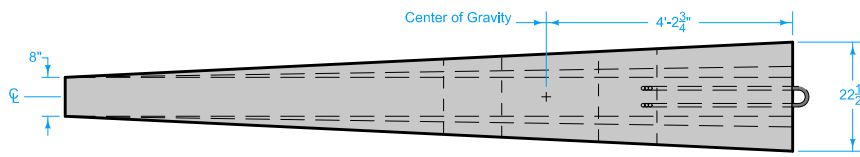
APPROVED BY DESIGN METHODS ENGINEER

**TEMPORARY BARRIER RAIL
(PRECAST CONCRETE)**

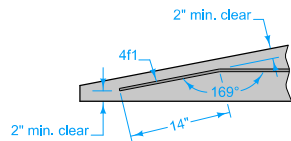
TAPERED END SECTION



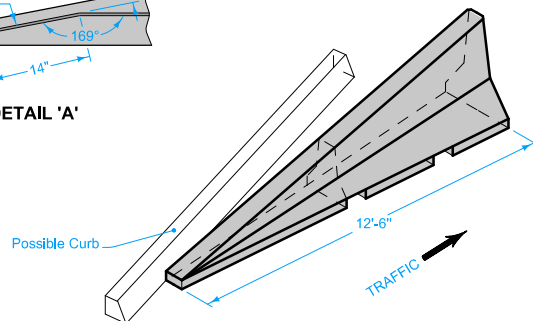
SIDE ELEVATION
(For connection to "marked end" of barrier.
Invert loop bars for other end.)



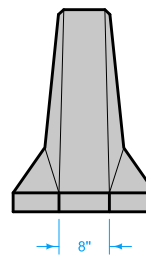
PLAN



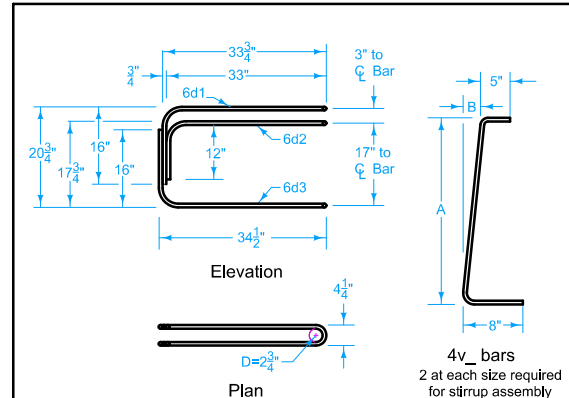
DETAIL 'A'



PERSPECTIVE VIEW



FRONT ELEVATION



BENT BAR DETAILS
(Connection to "Marked End" shown,
Invert for other end)

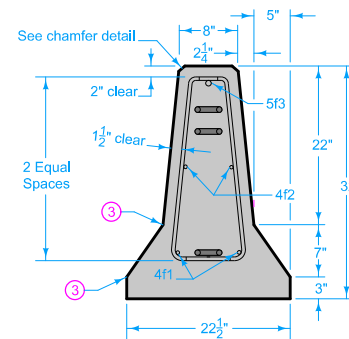
BENT BAR DETAILS
(Dimensions are out to out of bars unless otherwise noted.)

③ 1 inch radius allowed.

Per 12'-6" Barrier Taper Section

REINFORCING A615 Gr. 60					
Bar	Bar Size	Shape	No. of Bars	Length ft.	Weight lbs.
4v1	4	[Diagram]	2	23"	2.6
4v2	4	[Diagram]	2	26"	2.9
4v3	4	[Diagram]	2	30"	3.3
4v4	4	[Diagram]	2	33"	3.7
4v5	4	[Diagram]	2	3'-2"	4.2
4v6	4	[Diagram]	2	3'-4"	4.5
4f1	4	[Diagram]	2	12'-0"	16.0
4f2	4	[Diagram]	2	7'-6"	10.0
5f3	5	[Diagram]	1	11'-9"	12.3
LOOP ASSEMBLY					
6d1	6	[Diagram]	1	8'-5"	12.6
6d2	6	[Diagram]	1	7'-7"	11.4
6d3	6	[Diagram]	1	8'-6"	12.8

Bar	A	B
4v1	10"	1"
4v2	13"	1 1/4"
4v3	17"	1 3/8"
4v4	20"	1 5/8"
4v5	24 1/2"	2 3/8"
4v6	27"	2 3/4"



END SECTION

STANDARD ROAD PLAN

REVISIONS: Changed Obstacle to Object.

APPROVED BY DESIGN METHODS ENGINEER

TEMPORARY BARRIER RAIL (PRECAST CONCRETE)

REVISION

3	04-20-21
---	----------

BA-401

SHEET 4 of 4