



# Bridge Railing Identification Guide

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Bridge Division

July 2020

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# Chapter 1

## About This Guide

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### Purpose

This guide is an aid for Texas Department of Transportation (TxDOT) personnel and consultants who must identify existing bridge railing types in the field.

The information provided here is guidance only, and does not constitute policy. For policy on use of bridge railing in Texas, refer to the *Bridge Railing Manual*. Should conflicts in information exist, the *Bridge Railing Manual* governs.

### Updates

Updates to this guide are summarized in the following table.

Revision History

Version	Publication Date	Summary of Changes
2016-1	January 2016	New guide published.
2016-2	March 2016	Information added for T221P and T224 railings.
2019	September 2019	Information added for T2P, C2P, and T222. Modified information for T1P, T77 and T401.
2020	July 2020	Removed T101, C101 T4, and T6 railing. Modified information for C4/C4(S) and C4(A).

### Organization

The information in this guide is organized as follows:

- Chapter 1, “About This Guide,” contains introductory information on the purpose and organization of this guide.
- Chapter 2, “Identifying Bridge Railing,” provides recommended steps for identifying railings in the field.
- Chapter 3, “Bridge Railing Families,” contains a table of railing families that have similar profiles.
- Chapter 4, “Bridge Railing Descriptions: Metal Railing,” contains descriptions of metal railings, their distinguishing features, figures, and photos.
- Chapter 5, “Bridge Railing Descriptions: Metal and Concrete Railing,” contains descriptions of metal and concrete railings, their distinguishing features, figures, and photos.

- Chapter 6, “Bridge Railing Descriptions: Concrete Railing,” contains descriptions of concrete railings, their distinguishing features, figures, and photos.

## **Feedback**

You may direct any questions or comments on the content of this guide to the Director of the Bridge Division, Texas Department of Transportation.

## Chapter 2

### Identifying Bridge Railing

#### Identification Procedure

The following provides recommended steps for identifying existing bridge railing in the field.

1. Compare the bridge railing to figures and pictures provided in Chapters 4 – 6.
  - a. Take note of distinguishing features of the bridge railing.
  - b. If a corresponding figure cannot be found, the bridge railing is no longer acceptable for use (non-compliant).
2. Measure dimensions of the bridge railing and compare to the critical dimensions shown in the figures provided in Chapters 4 – 6.
  - a. Many bridge railings in families (i.e. T2 - T201 - T221 family or T5 - T501 - T551 family) will look similar and must be distinguished by dimensions.
3. Measure the height of existing bridge railing.
  - a. If the bridge has no overlay, measure height as shown in Figure 1.
  - b. If the bridge is topped with overlay or seal coat, take two measurements if possible:
    - i. On the front side of rail from the top of overlay as shown in Figure 2.
    - ii. On the back side of rail from the concrete deck surface.

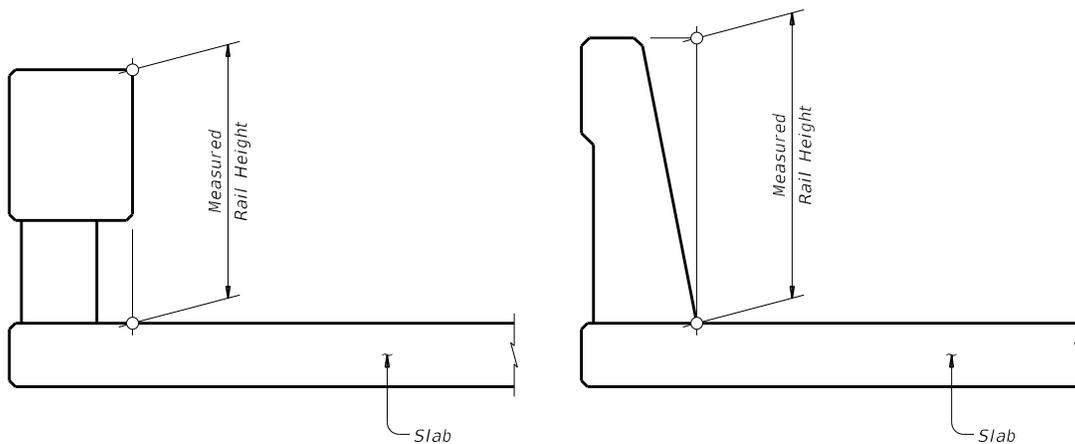


Figure 1: Measuring bridge railing height with no overlay

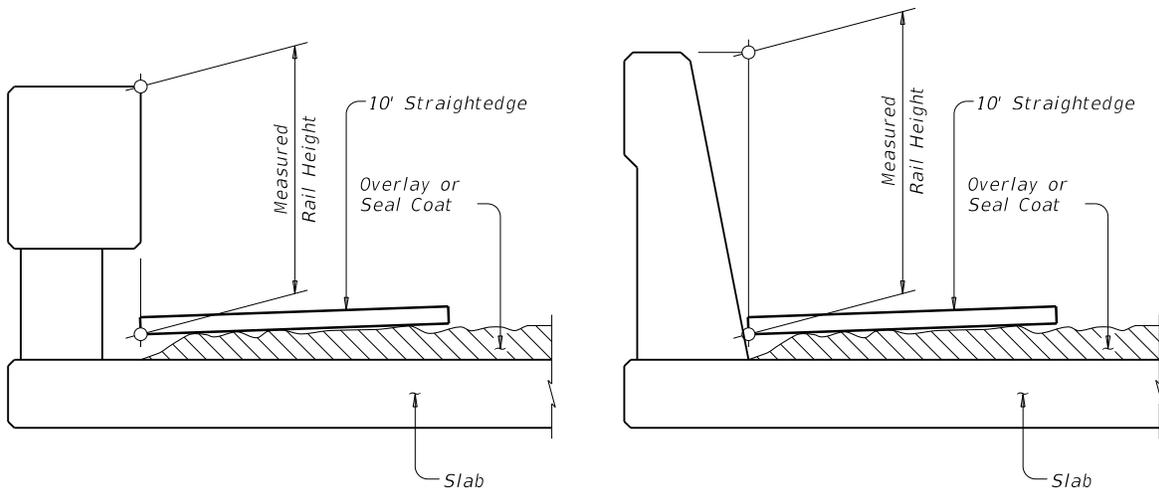


Figure 2: Measuring bridge railing height with overlay or seal coat

### Explanation of Railing Height

The *nominal height* provided in the tables of Chapters 4 – 6 is the standard height of the railing measured from the riding surface, as depicted in Figures 1 and 2.

Most railing standard drawings allow for the railing to be constructed 2 in. taller than nominal height when an overlay is to be placed immediately after construction, thus maintaining the nominal height from riding surface. Step 3.b.ii in the Identification Procedure on the previous page is intended to capture which railings were built with this allowance.

Some railings can accommodate a second overlay, thus reducing height below nominal, without significantly affecting the performance of the railing. This is listed as *minimum height in the following tables (or sections)*. Other railings – notably older, shorter railings and combination railings – cannot be reduced below nominal height, and as such, will show the same height for nominal and minimum.

## Chapter 3 Bridge Railing Families

### Overview

Through the years, many bridge railings have been subject to geometry changes, typically due to changes in crash testing requirements. Changes can include increased height and width. As such, many bridge railings will look similar and must be distinguished by dimensions. Railings have been grouped into the following families to aid in identification.

**Table 1: Bridge Railing Families**

	Family	Current Standard Railing	No Longer Used for New Construction
<b>Bridge Railing Families (Railings with similar profiles)</b>	<b>Metal Railing</b>		
	T101RC	none	T101RC
	T131RC	T131RC	none
	T421	none	T421
	T631	T631, T631LS	none
	<b>Metal and Concrete Railing</b>		
	T1F	T1F	none
	T1P	T1P (as a working drawing)	none
	T2P	T2P, C2P	none
	T1W	T1W, C1W	TW3, CW2
	T401	T402, C402	T401, C4(A), C4, C4(S)
	T77	none	T77
	T80HT	T80HT	HT
	<b>Concrete Railing</b>		
	T221	T221, T221P, C221, T222	B221, T201, C201, B201, T2, C2
	T223	T223, T224, C223	T203, C203, T202, C202
	T411	T411, C411	none
	C412	C412	T412, T414
	T551	T551, T552	T501, T502, C501, C502, T503, T504, T5
	T66	T66, C66	none
	SSTR	SSTR, T80SS	none
	T80TT	T80TT (as a working drawing)	TT
n/a	none	Low-Profile Rail	

## Chapter 4 Bridge Railing Descriptions: Metal Railing

### T101RC Family

#### T101RC

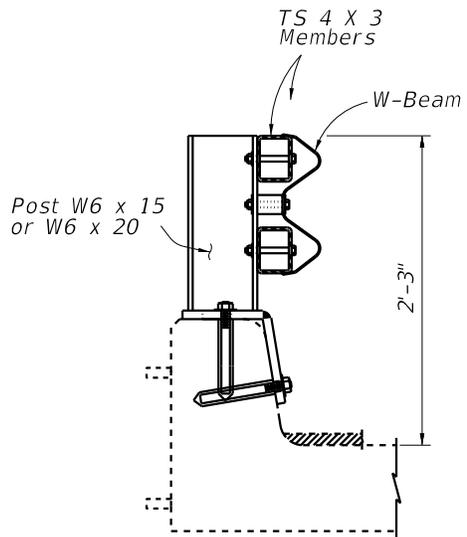


Figure 3: T101RC



Figure 4: T101RC

Use	Acceptable - No longer for new construction
Classification	Traffic
Description	A version of T101 rail for retrofitting on bridges with curbs
Approximate Period of Installation	1990 - 2013
Nominal Height / Min. Height	27 in. / 27 in.
Distinguishing Features	Mounted on a curb

# T131RC Family

## T131RC

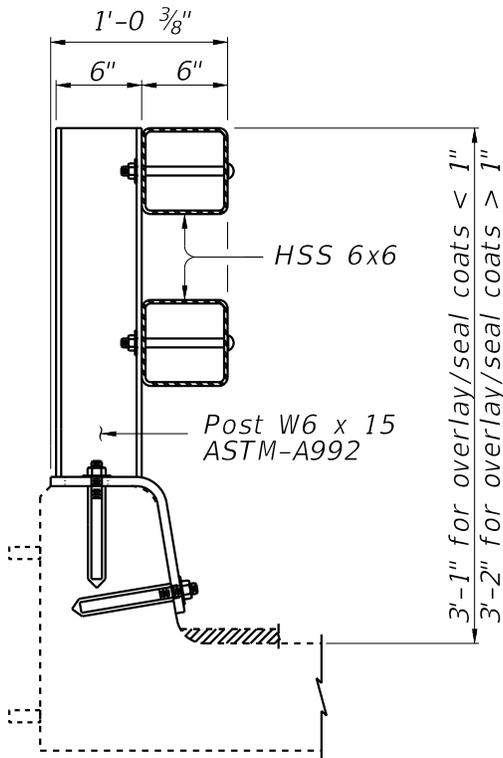


Figure 6: T131RC Rail

Figure 5: T131RC Rail

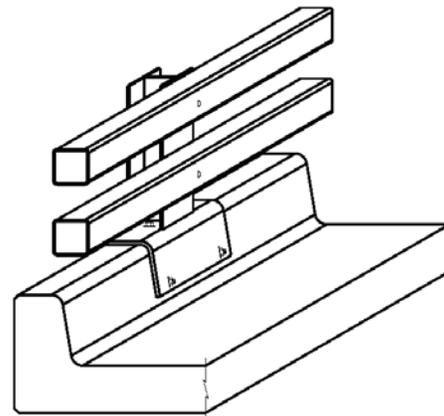


Figure 7: T131RC Rail

Use	Current standard railing
Classification	Traffic
Description	Two steel square tubes and W6X15 posts
Approximate Period of Installation	2012 - Present
Nominal Height / Min. Height	36 in. / 34 in.
Distinguishing Features	Mounted on a curb; does not have a W-beam

## T421 Family

### T421

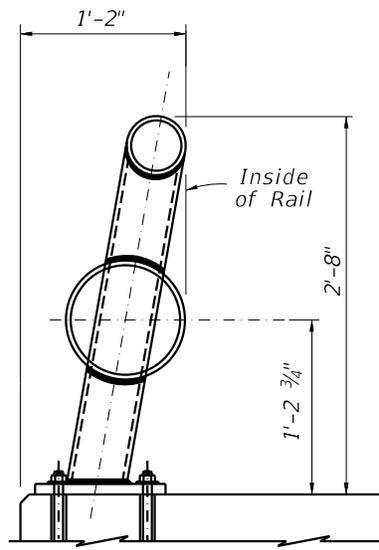


Figure 8: T421 Rail



Figure 9: T421 Rail

Use	Acceptable - No longer for new construction
Classification	Traffic
Description	Slanted steel posts with large round tubular rails
Approximate Period of Installation	1992 - 2001
Nominal Height / Min. Height	32 in. / 30 in.

## T631 Family

T631 and T631LS

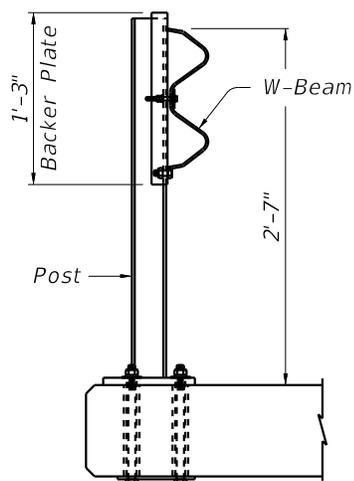


Figure 11: T631 & T631LS Rail



Figure 10: T631 Rail

Figure 12: T631 Rail

Use	Current standard railing
Classification	Traffic
Description	W-beam rail supported on S3x5.7 steel posts
Approximate Period of Installation	2014 - Present
Nominal Height / Min. Height	31 in. / 27 in.
Distinguishing Features	T631: Steel posts spaced at 3' - 1 1/2" T631LS: Steel posts spaced at 6' - 3"

## Chapter 5

### Bridge Railing Descriptions: Metal and Concrete Railing

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#### **Concrete Railings with Pedestrian Pipe Rail**

The following concrete rails, which have a small, metal pipe rail or chain link fence on top for pedestrian-compliance, are shown in their respective Concrete Railing families:

[C221](#), [C201](#), [C2](#), [B221](#), and [B201](#) in the [T221 Family](#)

[C223](#), [C203](#), and [C202](#) in the [T223 Family](#)

[C501 and C502](#) in the [T551 Family](#)

[C66](#) in the [T66 Family](#)

## T1F Family

### T1F

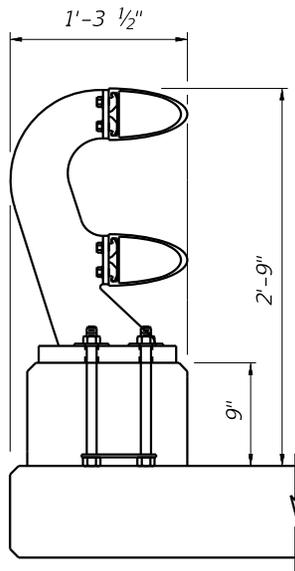


Figure 14: T1F Rail



Figure 13: T1F Rail



Figure 15: T1F Rail

Use	Current standard railing
Classification	Traffic
Description	9 in. concrete parapet with two aluminum half-ellipse rails supported by steel posts
Approximate Period of Installation	2007 - Present
Nominal Height / Min. Height	33 in. / 31 in.

## T1P Family

### T1P

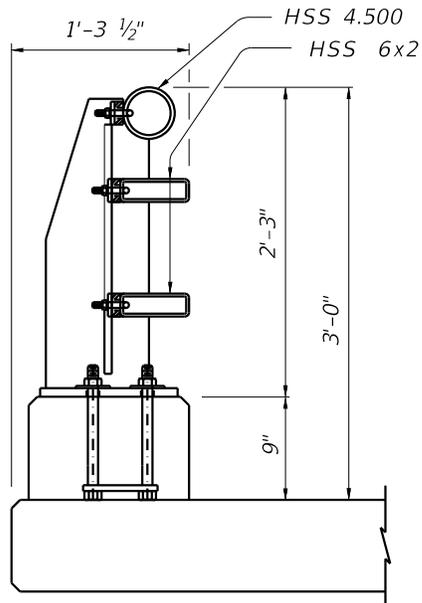


Figure 16: T1P Rail



Figure 17: T1P Rail – Traffic Face

Use	Current standard railing (working drawing)
Classification	Traffic
Description	9 in. concrete parapet with a round steel top tube and two rectangular steel tubes supported by twin steel posts, and a picket panel mounted on back side of rail
Approximate Period of Installation	2014 – Present
Nominal Height / Min. Height	36 in. / 34 in.

## T2P Family

### T2P

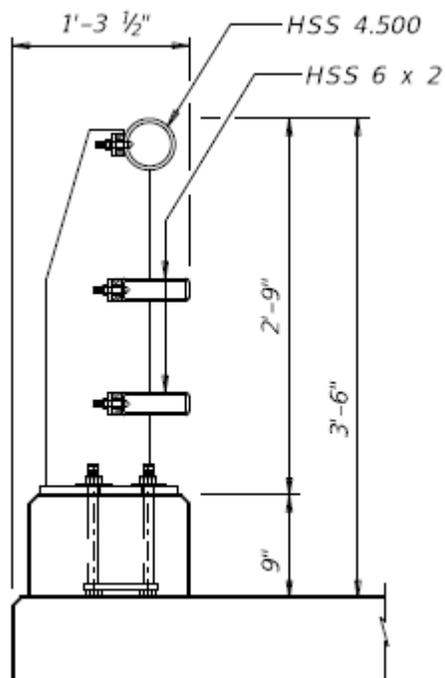


Figure 18: T2P Rail



Figure 19: T2P Rail – Traffic Face

Use	Current standard railing
Classification	Traffic
Description	9 in. concrete parapet with a round steel top tube and two rectangular steel tubes supported by twin steel posts,
Approximate Period of Installation	2018 - Present
Nominal Height / Min. Height	44 in. / 42 in.

C2P

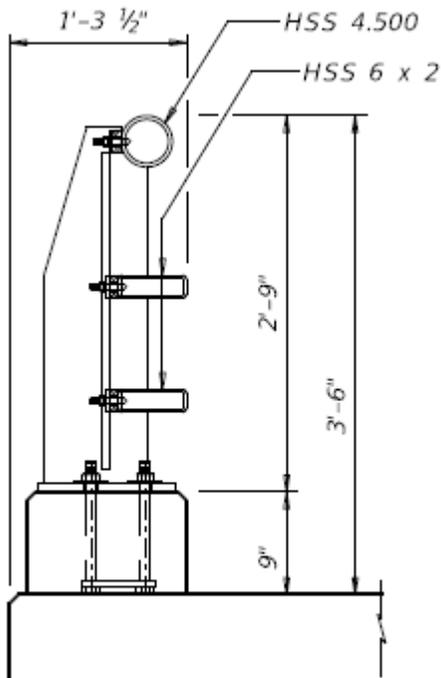


Figure 20: C2P Rail



Figure 21: C2P Rail – Traffic Face

Use	Current standard railing
Classification	Traffic
Description	9 in. concrete parapet with a round steel top tube and two rectangular steel tubes supported by twin steel posts, and a picket panel mounted on back side of rail
Approximate Period of Installation	2018 – Present
Nominal Height / Min. Height	44 in. / 42 in.

## T1W Family

### T1W

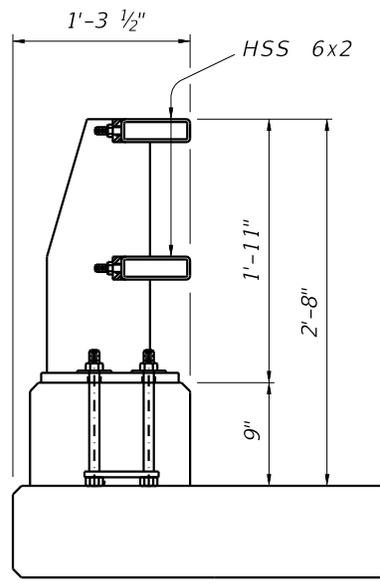


Figure 22: T1W Rail

Figure 23: T1W Rail

Use	Current standard railing
Classification	Traffic
Description	9 in. concrete parapet with two steel rectangular tube rails supported by twin steel posts
Approximate Period of Installation	2009 - Present
Nominal Height / Min. Height	32 in. / 30 in.
Distinguishing Features	Posts are anchored with four bolts.

# C1W

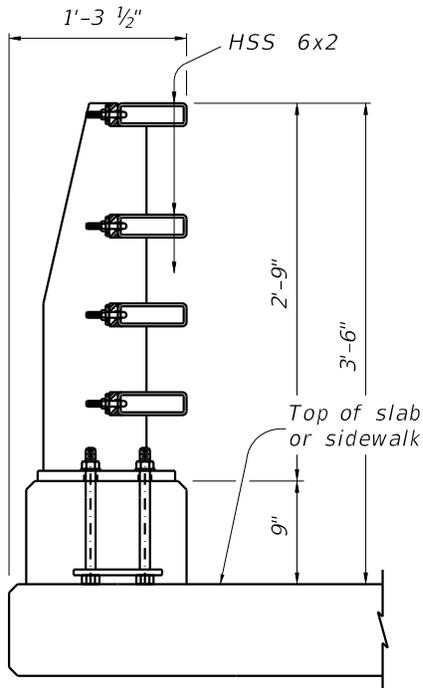


Figure 24: C1W Rail



Figure 25: C1W & CW2 Rail

Use	Current standard railing
Classification	Combination
Description	9 in. concrete rail parapet with four steel rectangular tube rails supported by twin steel posts
Approximate Period of Installation	2009 - Present
Nominal Height / Min. Height	42 in. / 42 in.
Distinguishing Features	Posts are anchored with four bolts.

TW3



Figure 26: TW3 Rail

Use	Acceptable – No longer for new construction
Classification	Traffic
Description	6 in. concrete curb with steel posts and two steel tube rails
Approximate Period of Installation	2007 – 2009
Nominal Height / Min. Height	29 in. / 27 in.
Distinguishing Features	Appearance of this rail is similar to T1W. Major differences are 1' – 6 ½" wide curb, straight slope on backside of post, and posts anchored with three bolts as opposed to four.

CW2

Use	Acceptable – No longer for new construction
Classification	Combination
Description	9 in. concrete curb with steel posts and four steel tube rails
Approximate Period of Installation	2007 – 2009
Nominal Height / Min. Height	42 in. / 42 in.
Distinguishing Features	Appearance of this rail is similar to C1W. Major difference is the posts are anchored with three bolts as opposed to four.

## T401 Family

### T401

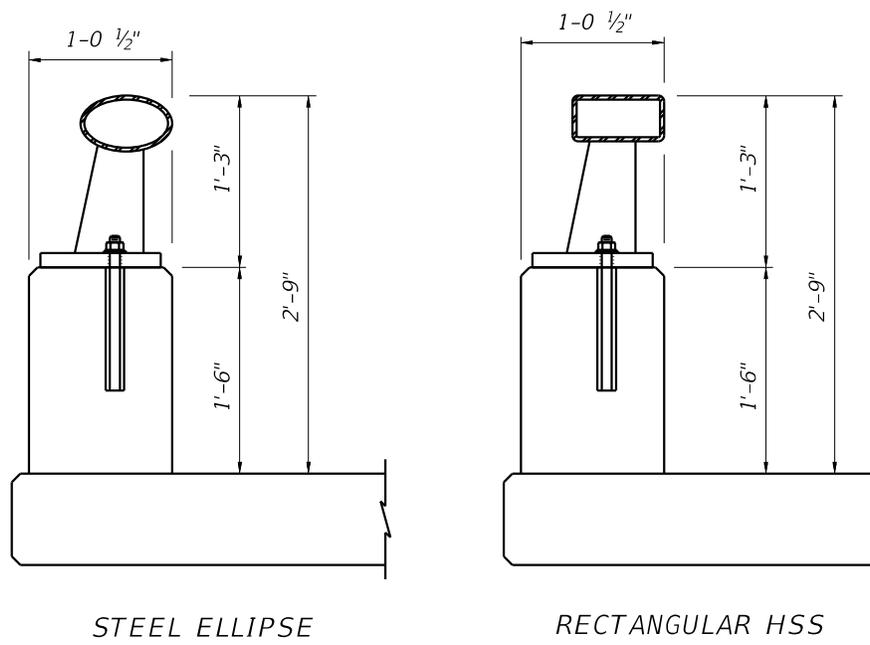


Figure 27: T401 Rail



Figure 28: T401 Rail

Use	Acceptable – No longer for new construction
Classification	Traffic
Description	18 in. concrete parapet with 15 in. steel ellipse or rectangular HSS rail
Approximate Period of Installation	2005 – 2019
Nominal Height / Min. Height	33 in. / 31 in.

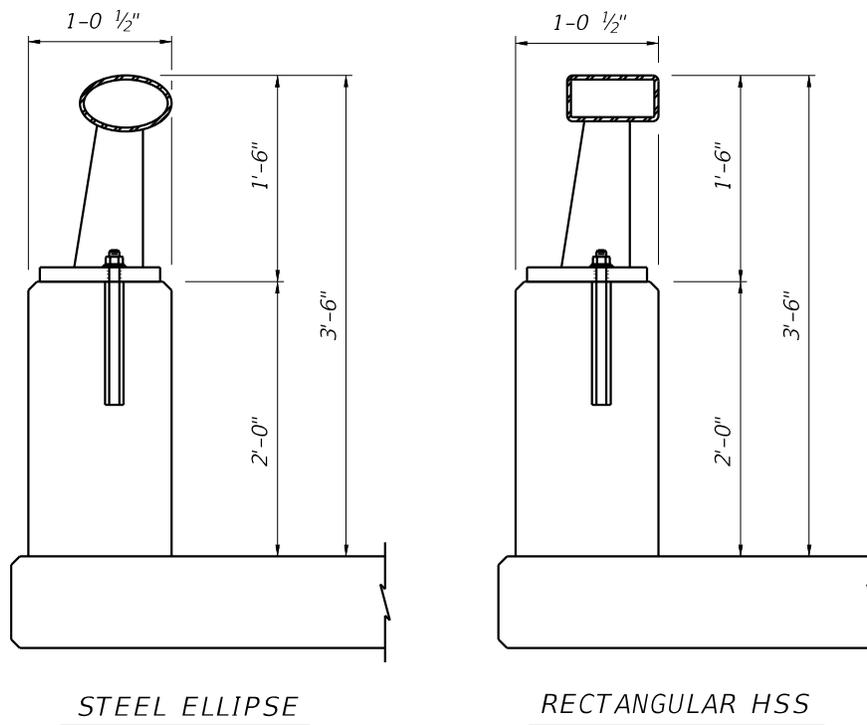


Figure 29: T402 Rail

Use	Current standard railing
Classification	Traffic
Description	24 in. concrete parapet with 18 in. steel ellipse or rectangular HSS rail
Approximate Period of Installation	2005 - Present
Nominal Height / Min. Height	42 in. / 40 in.

C402

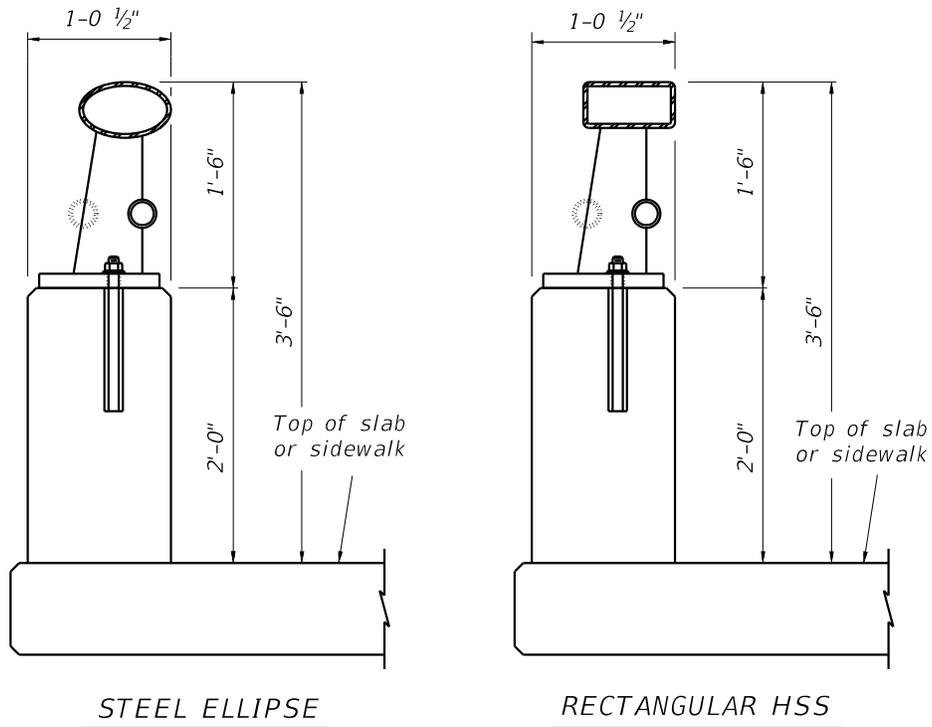


Figure 30: C402 Rail



Figure 31: C402 Rail – Traffic Face

Use	Current standard railing
Classification	Combination
Description	Same as T402 with additional 2 in. pedestrian pipe rail between parapet and top rail
Approximate Period of Installation	2005 – Present
Nominal Height / Min. Height	42 in. / 42 in.

C4(A)

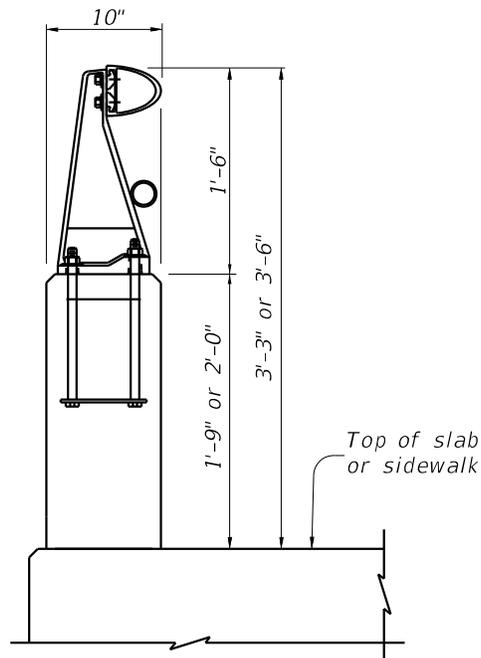


Figure 32: C4(A) Rail

Use	Acceptable – No longer for new construction
Classification	Combination (39 in. for traffic only)
Description	21 in. or 24 in. concrete parapet with 18 in. aluminum half-ellipse railing and aluminum posts
Approximate Period of Installation	1969 – 2005
Nominal Height / Min. Height	39 in. / 39 in. or 42 in. / 42 in.
Special Notes	Take note of parapet height: 21 in. or 24 in. Parapet height of less than 18 inches is considered non-compliant.

C4 and C4(S)

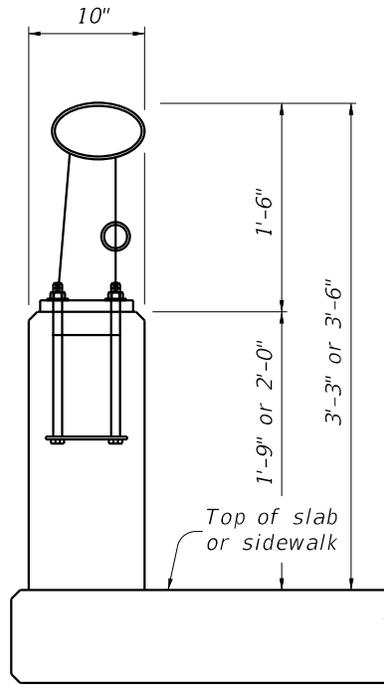


Figure 33: C4 & C4(S) Rail

Use	Acceptable – No longer for new construction
Classification	Combination (39 in. for traffic only)
Description	21 in. or 24 in. concrete parapet with 18 in. steel ellipse railing
Approximate Period of Installation	1965 – 2005
Nominal Height / Min. Height	39 in. / 39 in. or 42 in. / 42 in.
Special Notes	Take note of parapet height: 21 in. or 24 in. Parapet height of less than 18 inches is considered non-compliant.

## T77 Family

T77

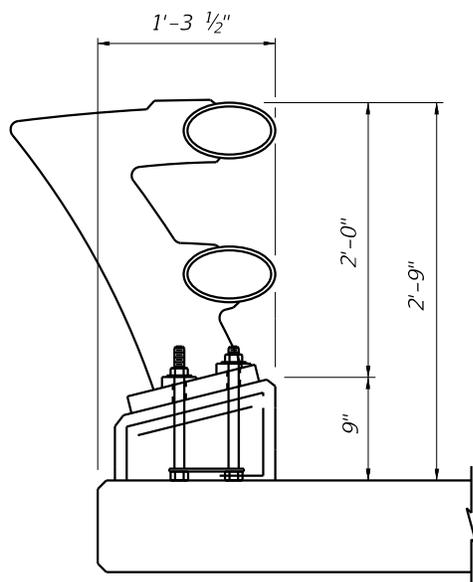


Figure 34: T77 Rail



Figure 35: T77 Rail

Use	Acceptable – No longer for new construction
Classification	Traffic
Description	Sloped 9 in. concrete parapet and two steel ellipses on steel posts
Approximate Period of Installation	2005 – 2018
Nominal Height / Min. Height	33 in. / 31 in.

# T80HT Family

## T80HT

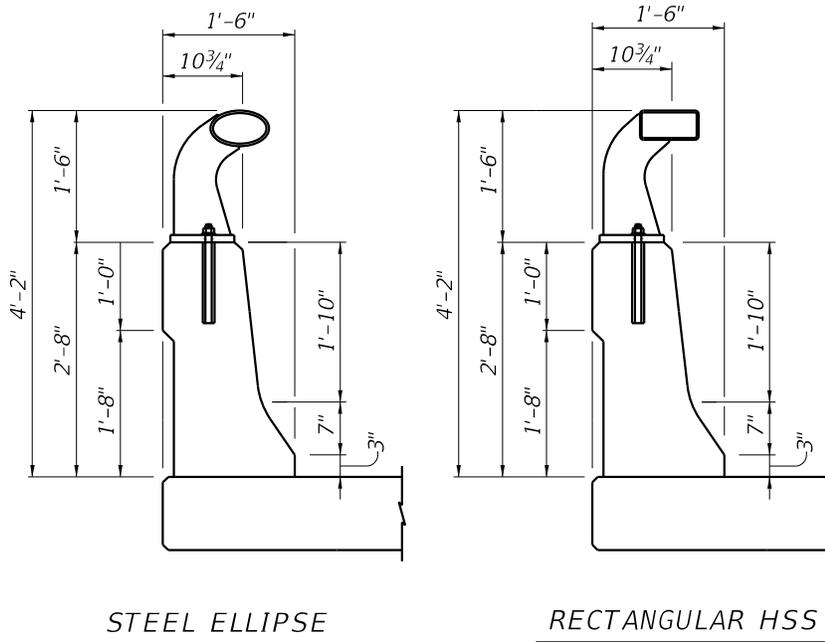


Figure 36: T80HT Rail

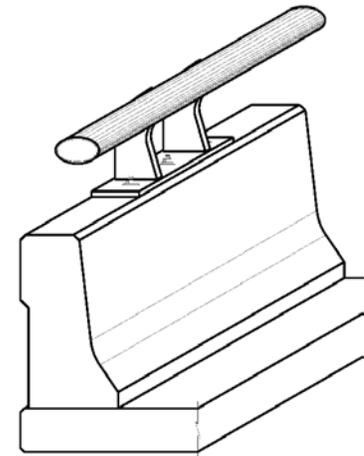


Figure 37: T80HT Rail

Use	Current standard railing
Classification	Traffic
Description	32 in. concrete F-shaped parapet with 18 in. elliptical steel or rectangular HSS railing
Approximate Period of Installation	2009 - Present
Nominal Height / Min. Height	50 in. / 47 in. to top of steel rail

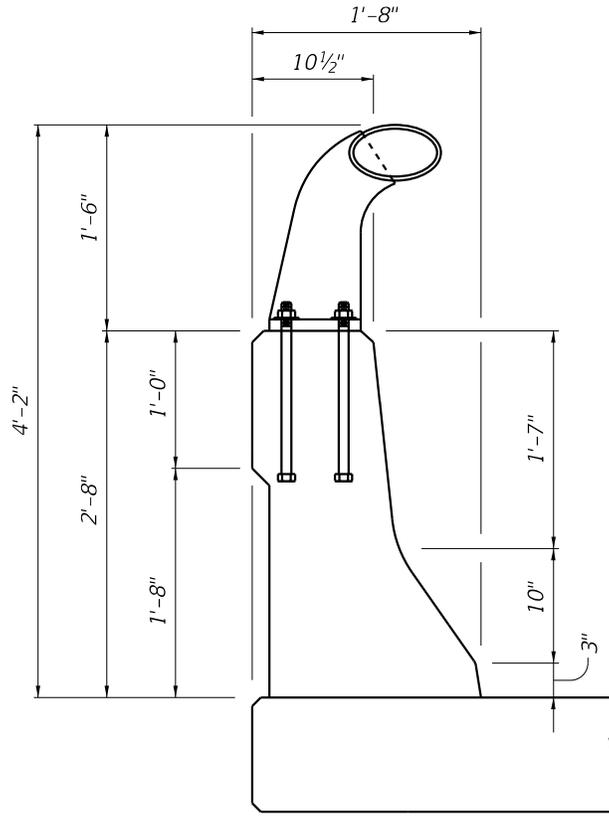


Figure 38: HT Rail

Use	Acceptable - No longer for new construction
Classification	Traffic
Description	Modified 32 in. concrete safety-shaped parapet with 18 in. elliptical steel railing
Approximate Period of Installation	1985 - 2009
Nominal Height / Min. Height	50 in. / 47 in. to top of steel rail

## Chapter 6

### Bridge Railing Descriptions: Concrete Railing

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#### T221 Family

T221

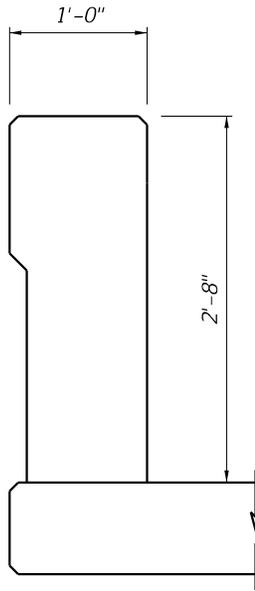


Figure 39: T221 Rail

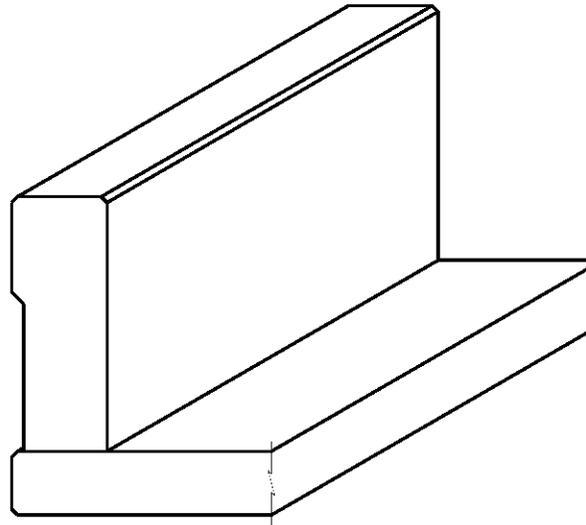


Figure 40: T221 Rail

Use	Current standard railing
Classification	Traffic
Description	Vertical faced concrete parapet
Approximate Period of Installation	2005 – Present
Nominal Height / Min. Height	32 in. / 30 in.
Distinguishing Features	Parapet is taller and thicker than that of the T201 railing

T221P

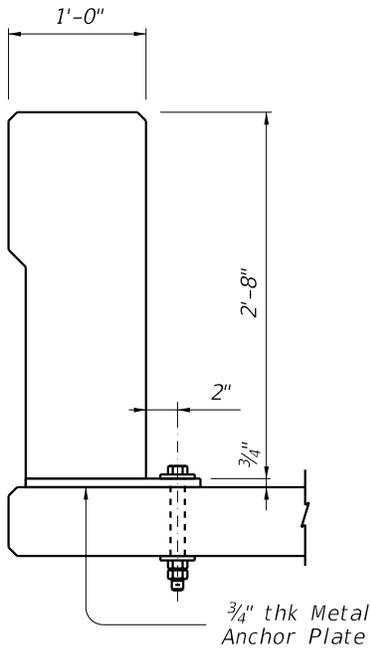


Figure 42: T221P Rail

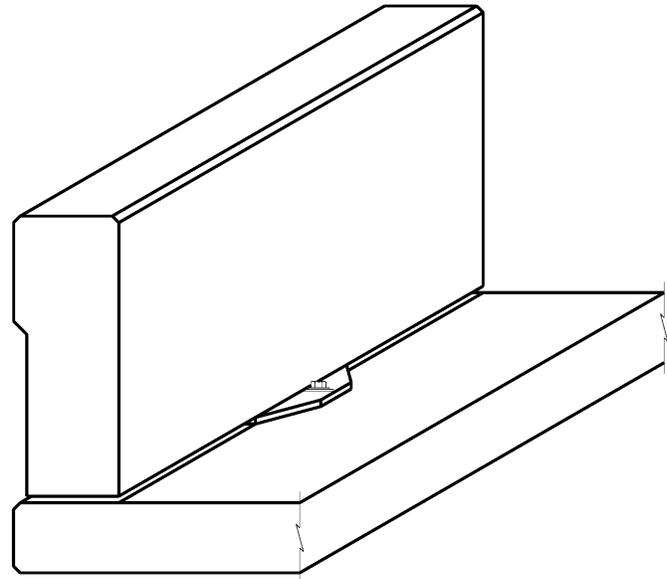


Figure 41: T221P Rail



Figure 43: T221P Rail

Use	Current standard railing
Classification	Traffic
Description	A precast version of the T221 vertical faced concrete parapet
Approximate Period of Installation	2016 - Present
Nominal Height / Min. Height	32 in. / 30 in.
Distinguishing Features	Presence of metal anchor plates

C221

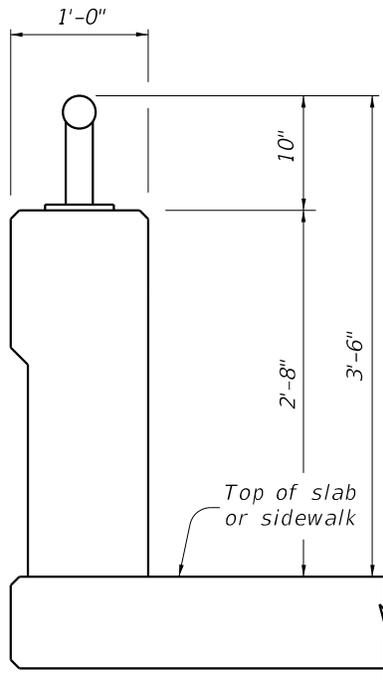


Figure 44: C221 Rail

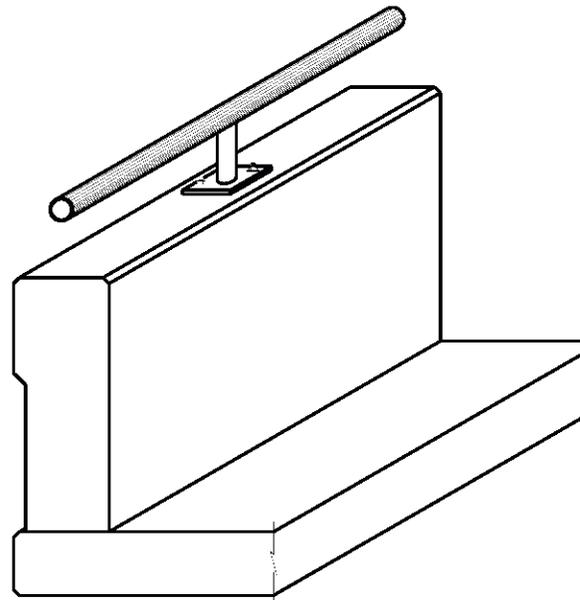


Figure 45: C221 Rail

Use	Current standard railing
Classification	Combination
Description	Same as T221 with a single pipe rail
Approximate Period of Installation	2005 - Present
Nominal Height / Min. Height	42 in. / 42 in. to top of pipe rail
Distinguishing Features	Parapet is taller and thicker than that of the C201 railing

T222

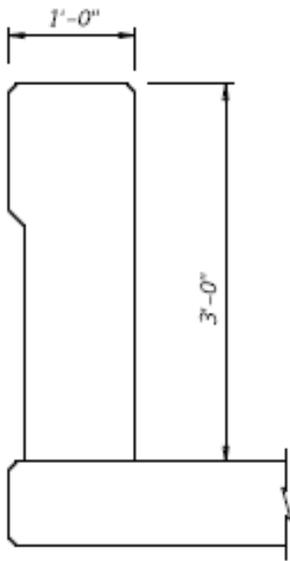


Figure 46: T222 Rail



Figure 47: T222 Rail

Use	Current standard railing
Classification	Traffic
Description	Vertical faced concrete parapet
Approximate Period of Installation	2018 - Present
Nominal Height / Min. Height	38 in. / 36 in.
Distinguishing Features	Parapet is taller and thicker than that of the T221 railing

T201

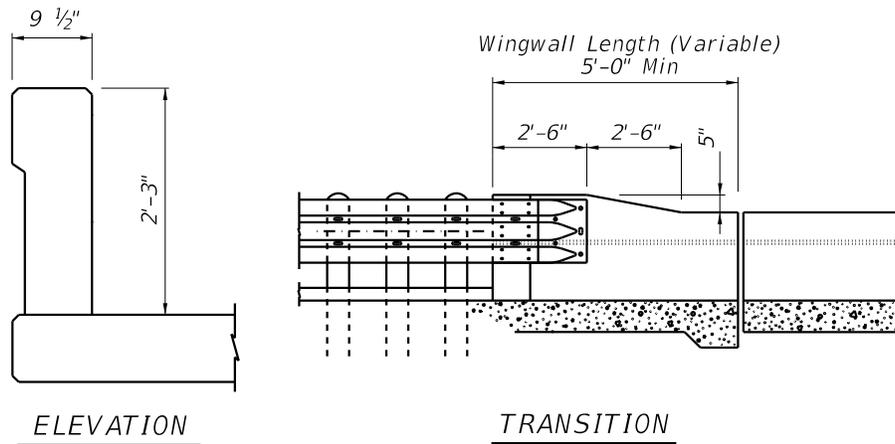


Figure 48: T201 Rail

Use	Acceptable – No longer for new construction
Classification	Traffic
Description	Vertical faced concrete parapet
Approximate Period of Installation	1977 – 2005
Nominal Height / Min. Height	27 in. / 27 in.
Distinguishing Features	Parapet is shorter and thinner than that of the T221 railing

C201

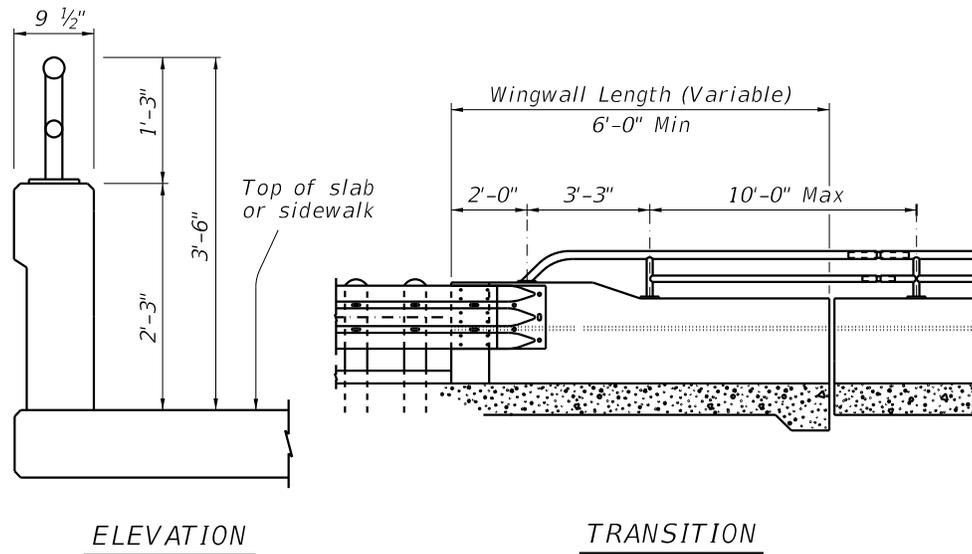


Figure 49: C201 Rail

Use	Acceptable – No longer for new construction
Classification	Combination
Description	Same as T201 with steel pipe rail
Approximate Period of Installation	1977 – 2005
Nominal Height / Min. Height	42 in. / 42 in. to top of pipe rail
Distinguishing Features	Parapet is shorter and thinner than that of the C221 railing

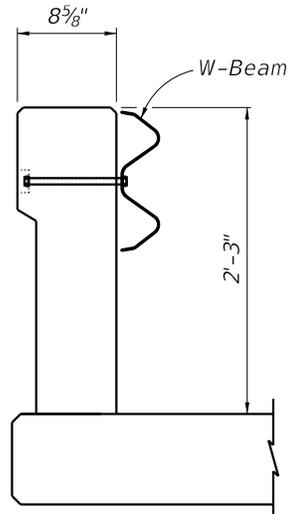
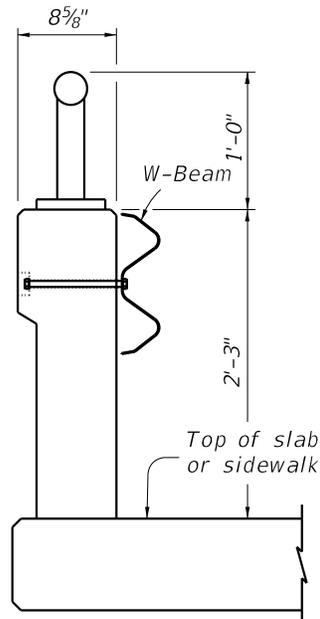


Figure 50: T2 Rail

Use	Acceptable – No longer for new construction
Classification	Traffic
Description	Vertical faced concrete parapet with W-beam fascia for entire length of rail
Approximate Period of Installation	1964 – 1977
Nominal Height / Min. Height	27 in. / 27 in.
Distinguishing Features	Parapet is shorter and thinner than that of the T221 railing
Special Note	The W-beam may be removed from rail, which does not affect acceptable performance.



**Figure 51: C2 Rail**

Use	Acceptable – No longer for new construction
Classification	Combination
Description	Same as T2 with a single steel pipe rail
Approximate Period of Installation	1964 – 1977
Nominal Height / Min. Height	39 in. / 39 in. to top of pipe rail
Distinguishing Features	Parapet is shorter and thinner than that of the C221 railing
Special Note	The W-beam may be removed from rail, which does not affect acceptable performance.

B221

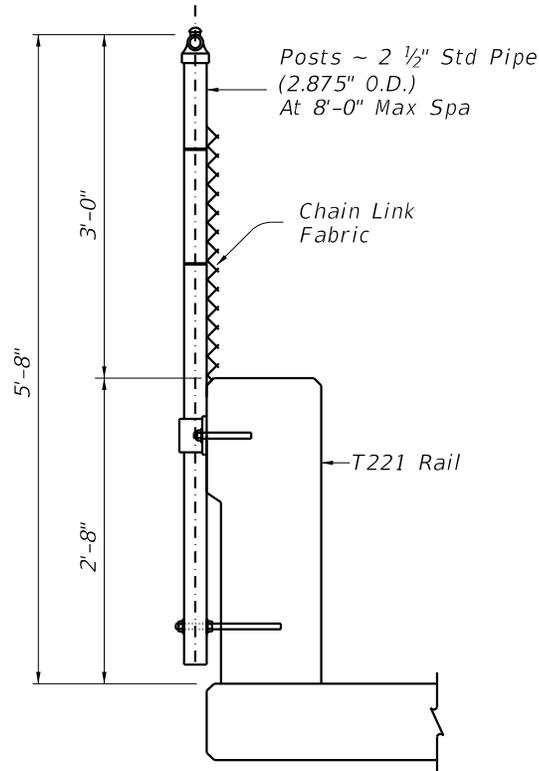


Figure 52: B221 Rail

Use	Acceptable - No longer for new construction
Classification	Bicycle
Description	Same as T221 with chain-link fence mounted on exterior side
Approximate Period of Installation	2005 - 2009
Nominal Height / Min. Height	32 in. / 30 in. to top of concrete parapet 68 in. to top of fence

B201

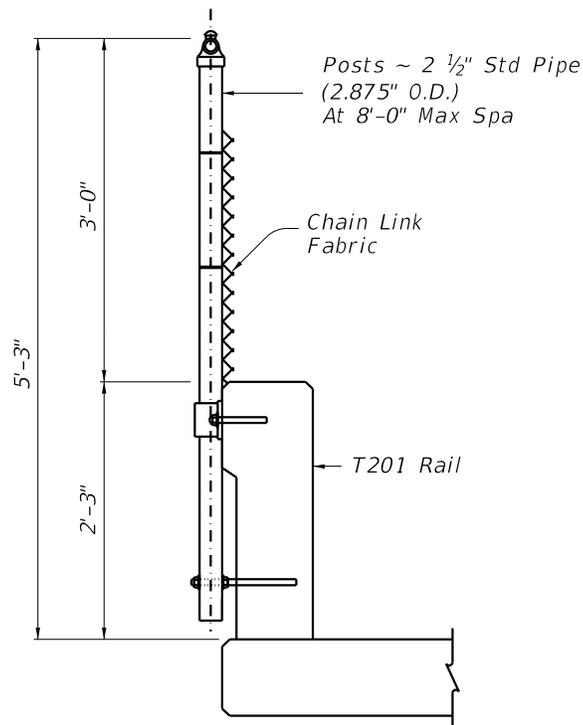


Figure 53: B201 Rail

Use	Acceptable - No longer for new construction
Classification	Bicycle
Description	Same as T201 with chain-link fence mounted on exterior side
Approximate Period of Installation	1996 - 2005
Nominal Height / Min. Height	27 in. / 27 in. to top of concrete parapet 63 in. to top of fence

## T223 Family

### T223

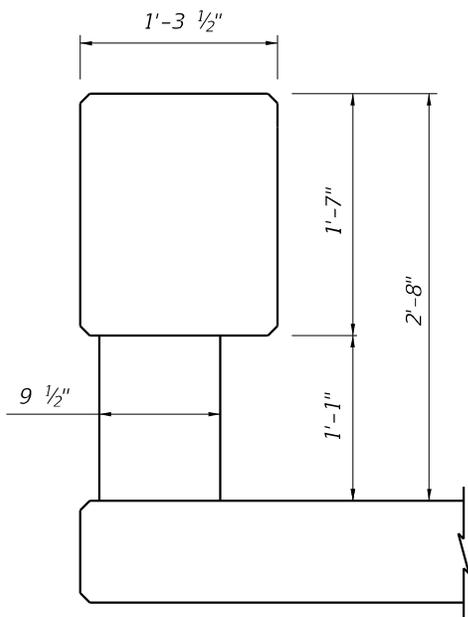


Figure 54: T223 Rail

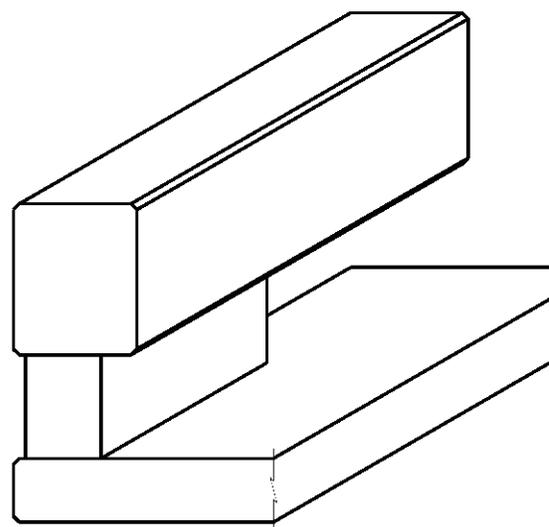


Figure 55: T223 Rail



Figure 56: T223 Rail - Traffic Face

Use	Current standard railing
Classification	Traffic
Description	Continuous concrete top beam 19 in. high by 15.5 in. wide on 13 in. high, 4 ft. long concrete posts
Approximate Period of Installation	2009 - Present
Nominal Height / Min. Height	32 in. / 30 in.

T224

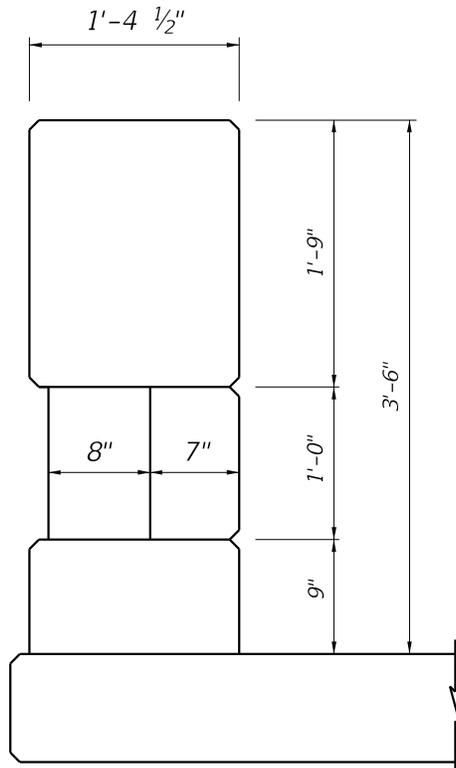


Figure 58: T224 Rail

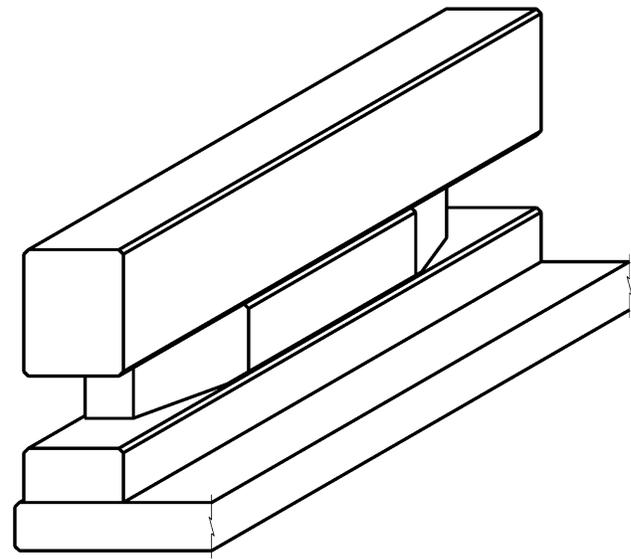


Figure 57: T224 Rail



Figure 59: T224 Rail

Use	Current standard railing
Classification	Traffic
Description	Continuous concrete top beam 21 in. high by 16.5 in. wide, on a 9 in. high continuous curb and 12 in. tall concrete posts, 5 ft. long and spaced a maximum of 10 ft. apart
Approximate Period of Installation	2016 - Present
Nominal Height / Min. Height	42 in. / 40 in.

C223

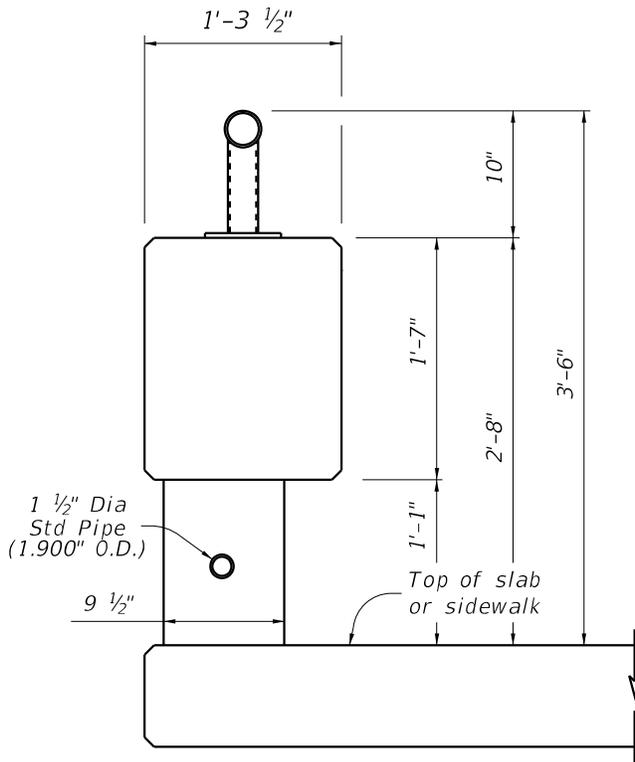


Figure 60: C223 Rail

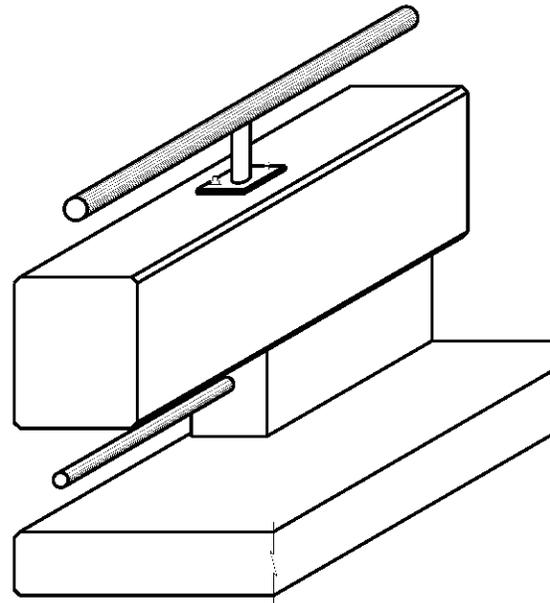


Figure 61: C223 Rail

Use	Current standard railing
Classification	Combination
Description	Same as T223 with a single pipe rail on top and pipe between each post
Approximate Period of Installation	2009 - Present
Nominal Height / Min. Height	42 in. / 42 in. to top of pipe rail

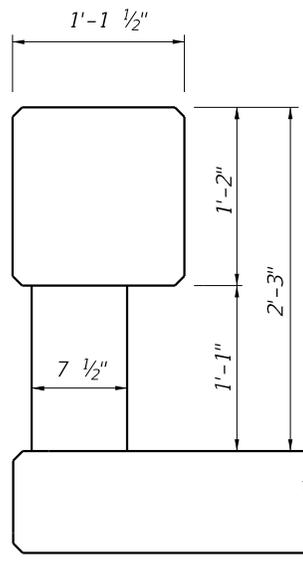


Figure 62: T203 Rail

Use	Acceptable – No longer for new construction
Classification	Traffic
Description	Concrete posts with concrete beam rail
Approximate Period of Installation	2001 – 2009
Nominal Height / Min. Height	27 in. / 27 in.



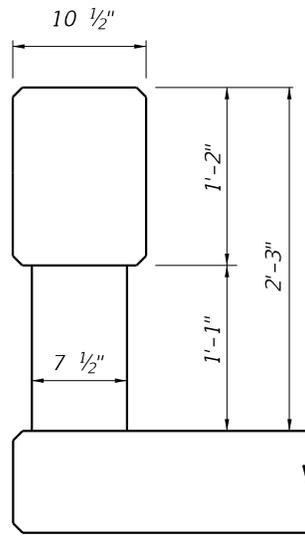


Figure 64: T202 Rail

Use	Acceptable - No longer for new construction
Classification	Traffic
Description	Concrete posts with concrete beam rail
Approximate Period of Installation	1977 - 2001
Nominal Height / Min. Height	27 in. / 27 in.

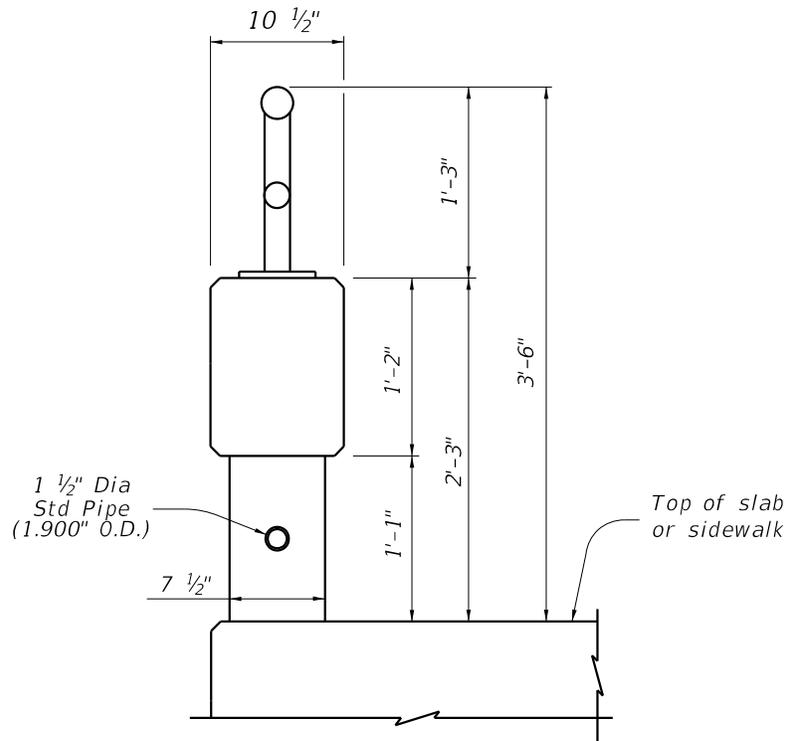
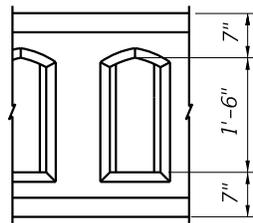


Figure 65: C202 Rail

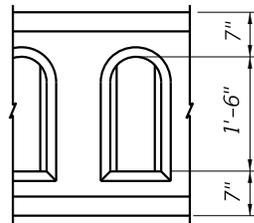
Use	Acceptable – No longer for new construction
Classification	Combination
Description	Same as T202 with double steel pipe rail on top and pipe between each post
Approximate Period of Installation	1980 – 2001
Nominal Height / Min. Height	42 in. / 42 in. to top of pipe rail

## T411 Family

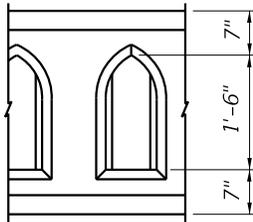
### T411



TYPE A



TYPE B



TYPE C

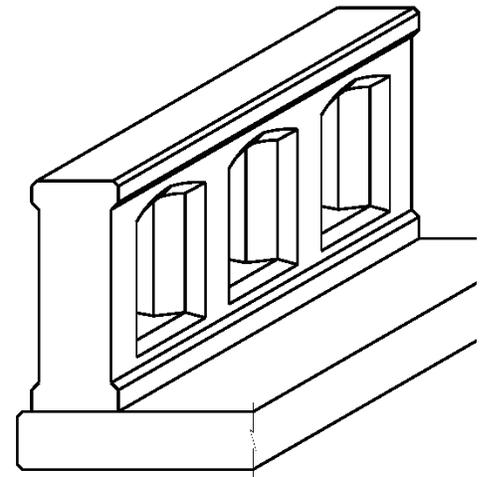
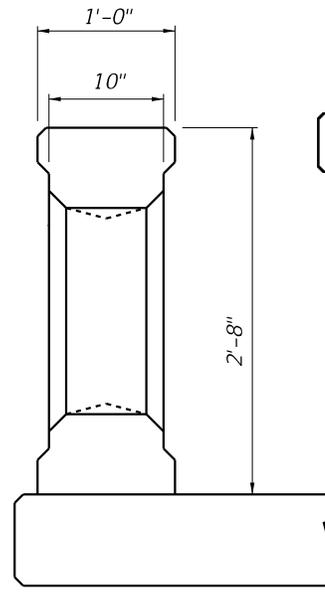


Figure 66: T411 Rail

Figure 67: T411 Rail

Use	Current standard railing
Classification	Traffic
Description	Continuous concrete railing that has 6-inch wide windows
Approximate Period of Installation	1989 - Present
Nominal Height / Min. Height	32 in. / 30 in.
Distinguishing Features	Aesthetic bridge railing with three available window types
Special Notes	Also referred to as "Texas Classic"

C411

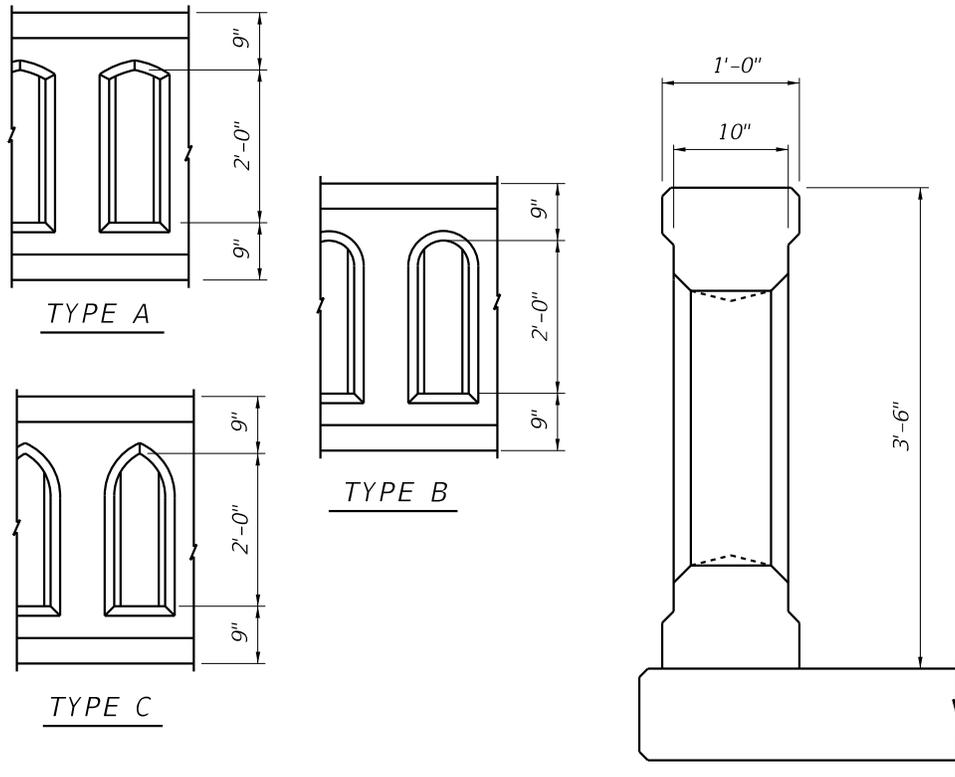


Figure 68: C411 Rail

Figure 69: C411 Rail

Use	Current standard railing
Classification	Combination
Description	Continuous concrete railing that has 6-inch wide windows
Approximate Period of Installation	1989 - Present
Nominal Height / Min. Height	42 in. / 42 in.
Distinguishing Features	Aesthetic bridge railing with three available window types
Special Notes	Also referred to as "Texas Classic"

# C412 Family

## C412



Figure 70: C412 Rail – Traffic Face

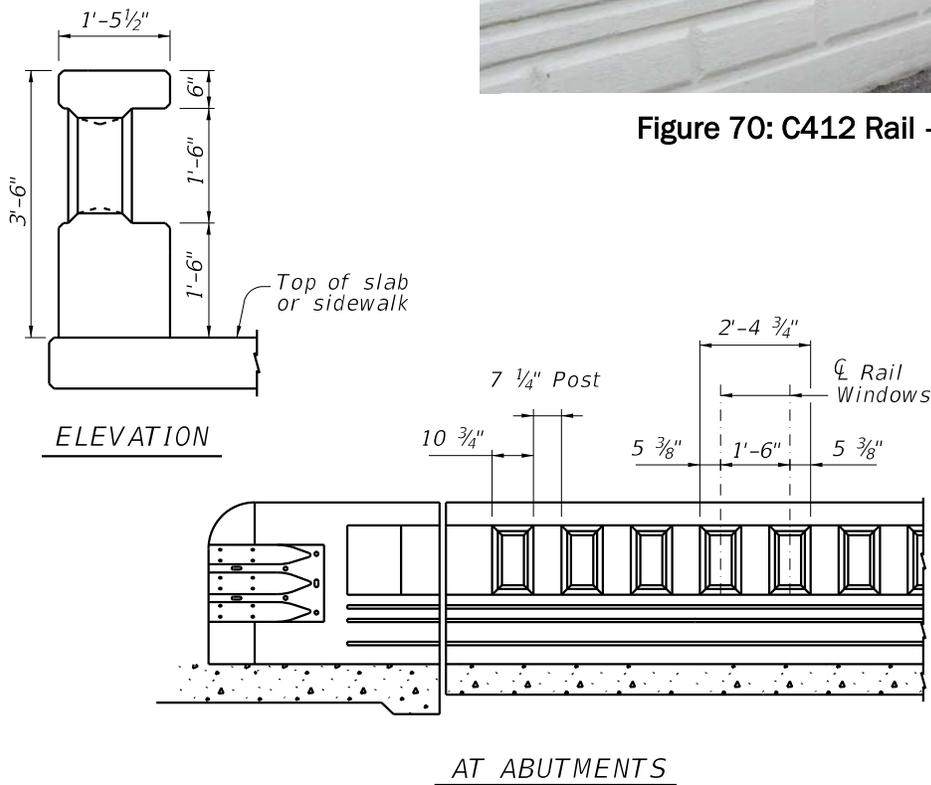


Figure 71: C412 Rail

Use	Current standard railing
Classification	Combination
Description	Continuous concrete railing that has 6-in wide windows. May or may not have pattern on lower portion of rail.
Approximate Period of Installation	2011 – Present
Nominal Height / Min. Height	42 in. / 42 in.

### T412

Use	Acceptable – No longer for new construction
Classification	Traffic
Description	Concrete with 6-inch windows. Early version of the C412 rail.
Approximate Period of Installation	2011
Nominal Height / Min. Height	42 in. / 42 in.

### T414

Use	Acceptable – No longer for new construction
Classification	Traffic
Description	Concrete with 6-inch windows. Early version of C412 rail.
Approximate Period of Installation	2011
Nominal Height / Min. Height	42 in. / 42 in.

## T551 Family

### T551 and T552

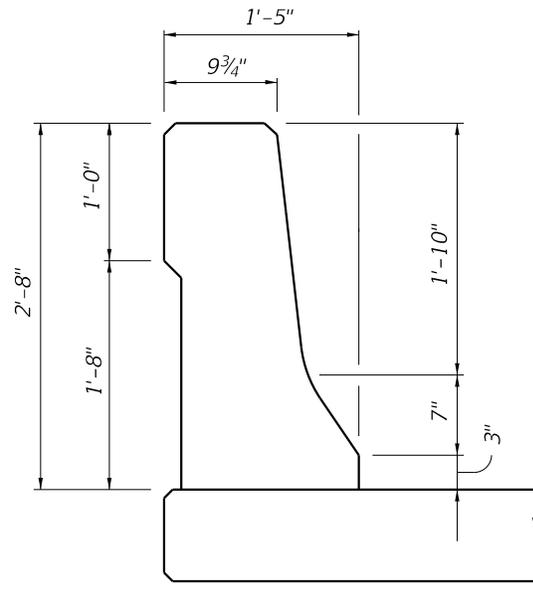


Figure 72: T551 & T552 Rail

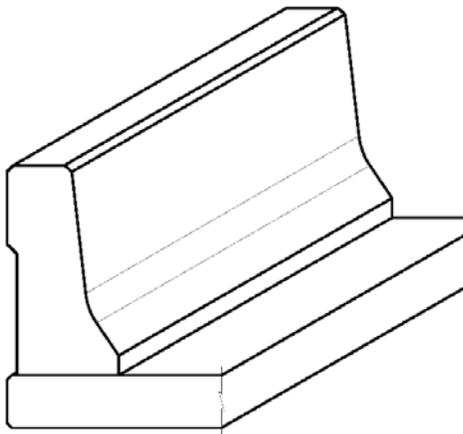


Figure 73: T551 Rail

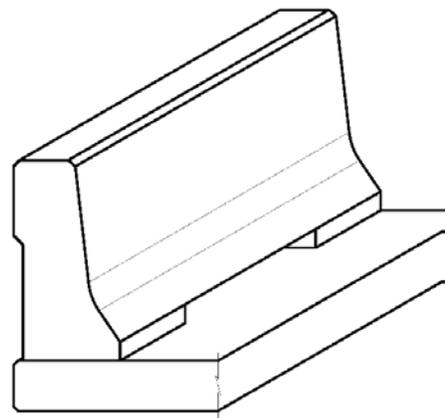


Figure 74: T552 Rail

Use	Current standard railing
Classification	Traffic
Description	Concrete F-Shaped parapet
Approximate Period of Installation	2009 - Present
Nominal Height / Min. Height	32 in. / 29 in.
Distinguishing Features	T552 has multiple, regularly spaced drain slots for entire length of railing. T551 can have intermittent or no drain slots.

T5, T501, and T502

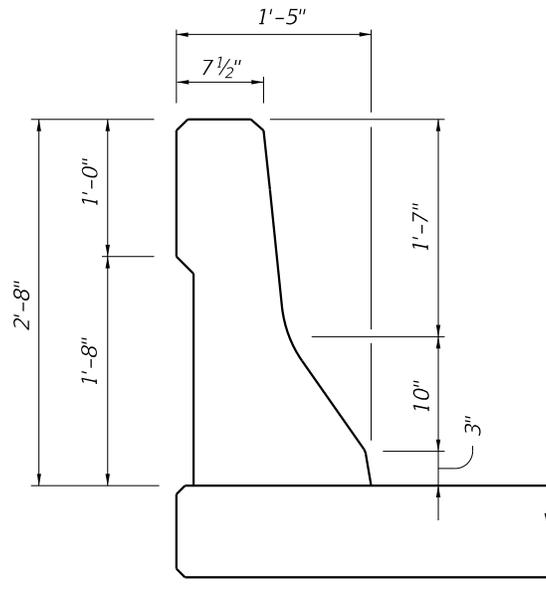


Figure 75: T5, T501 & T502 Rail

Use	Acceptable – No longer for new construction
Classification	Traffic
Description	Concrete safety shaped parapet
Approximate Period of Installation	T5: 1977 – 1985 T501 & T502: 1985 – 2009
Nominal Height / Min. Height	32 in. / 29 in.
Distinguishing Features	The T5 and T501 are geometrically identical; it is not necessary to distinguish between these rails. T502 has multiple, regularly spaced drain slots for entire length of railing. T501 and T5 can have intermittent or no drain slots.
Special Notes	Take note of presence or lack of 3 ft. vertical taper at toe of railing on upstream railing end.

C501 and C502

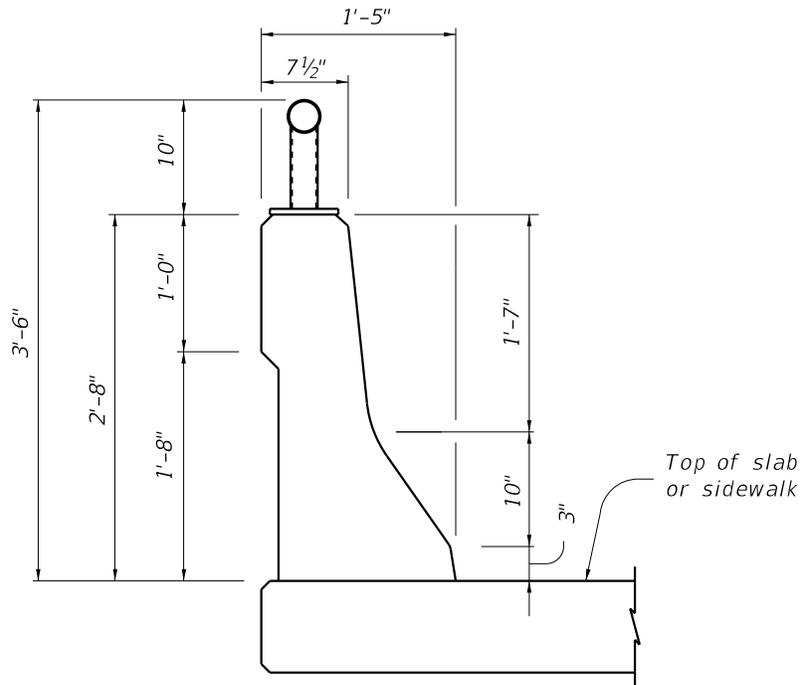


Figure 76: C501 & C502 Rail

Use	Acceptable - No longer for new construction
Classification	Combination
Description	Same as T501 and T502 with steel pipe railing
Approximate Period of Installation	1985 - 2009
Nominal Height / Min. Height	42 in. / 42 in. to top of pipe rail

T503 and T504

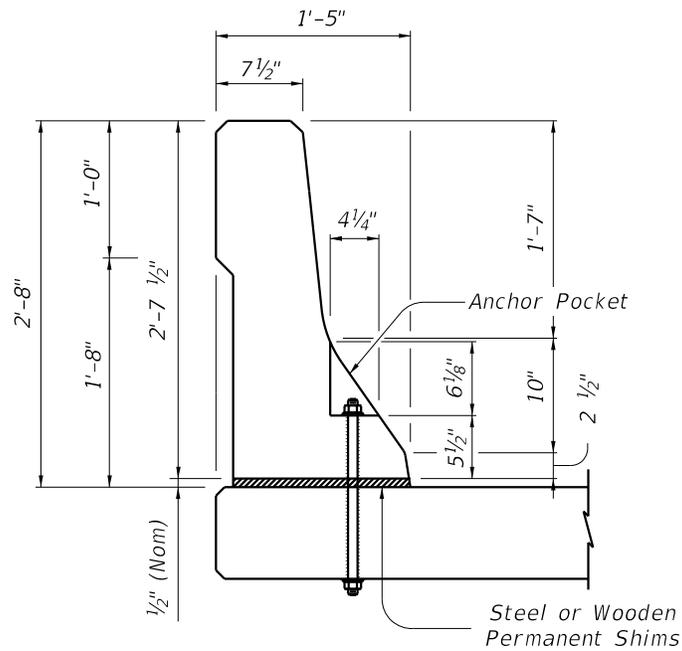


Figure 77: T503 & T504 Rail

Use	Acceptable – No longer for new construction
Classification	Traffic
Description	Precast concrete safety-shaped parapet
Approximate Period of Installation	1985 – 2009
Nominal Height / Min. Height	32 in. / 29 in.
Distinguishing Features	T503 was used on non-box beam superstructures T504 was used on box beam superstructures.
Special Notes	Anchor pockets may be filled with grout.

## T66 Family

### T66

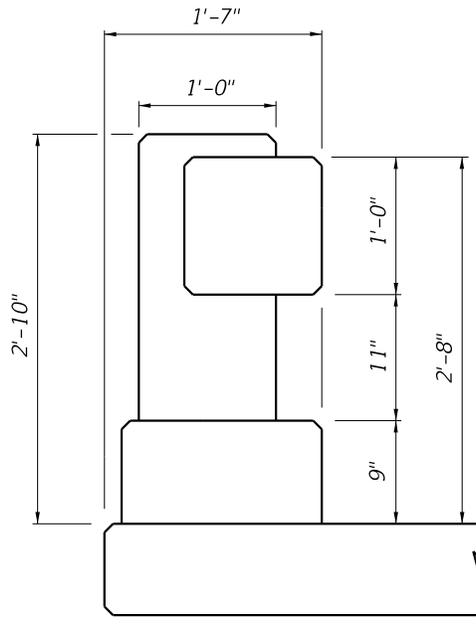


Figure 78: T66 Rail

Figure 79: T66 Rail – Outside Face



Figure 80: T66 Rail – Traffic Face

Use	Current standard railing
Classification	Traffic
Description	Concrete post and 12 in. square concrete beam rail on 9" concrete curb
Approximate Period of Installation	2009 – Present
Nominal Height / Min. Height	32 in. / 30 in.

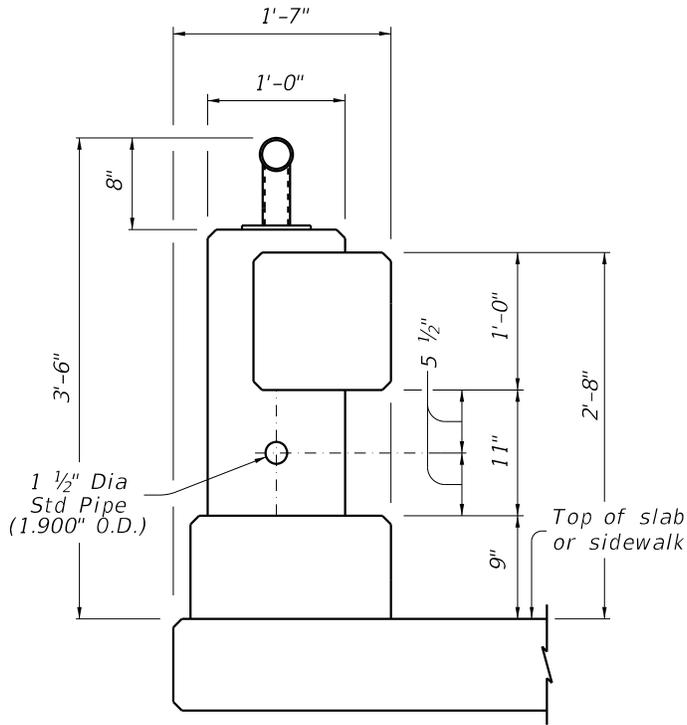


Figure 81: C66 Rail

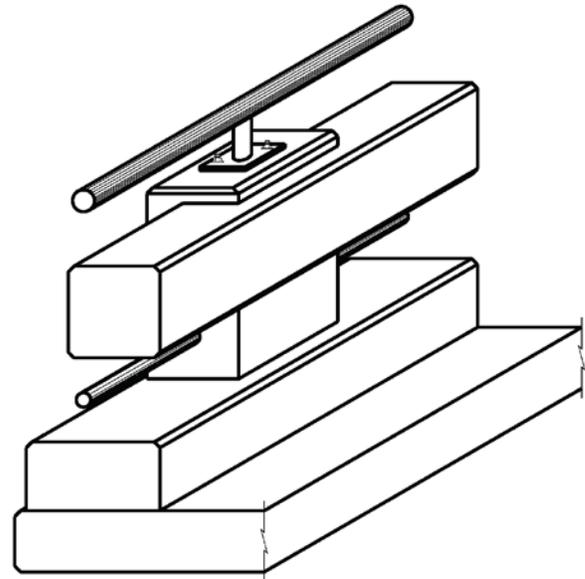


Figure 82: C66 Rail

Use	Current standard railing
Classification	Combination
Description	Same as T66 with a single pipe rail on top and pipe between each post
Approximate Period of Installation	2014 - Present
Nominal Height / Min. Height	42 in. / 42 in. to top of pipe rail

## SSTR Family

### SSTR

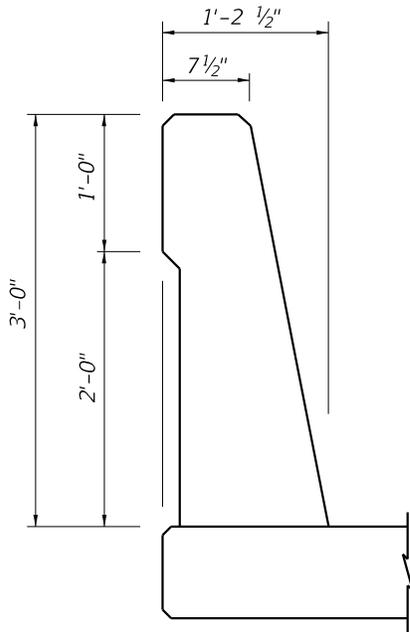


Figure 83: SSTR Rail

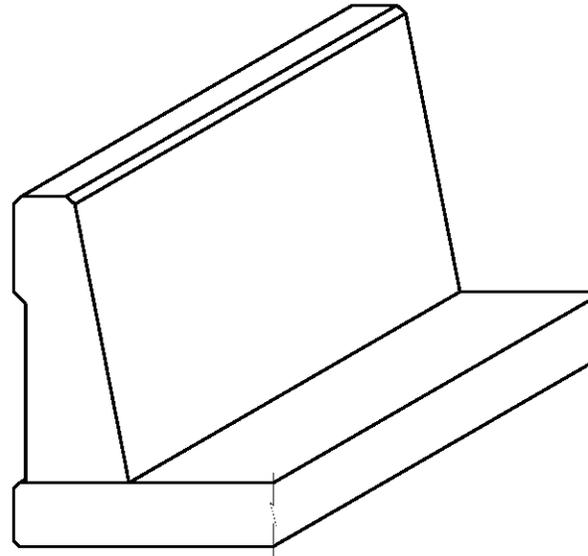


Figure 84: SSTR Rail

Use	Current standard railing
Classification	Traffic
Description	Concrete parapet with single front slope
Approximate Period of Installation	1994 - Present
Nominal Height / Min. Height	36 in. / 32 in.

T80SS

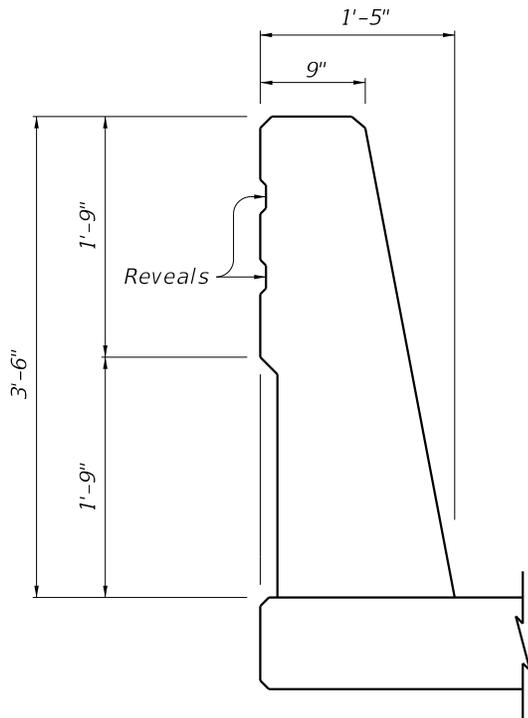


Figure 85: T80SS Rail

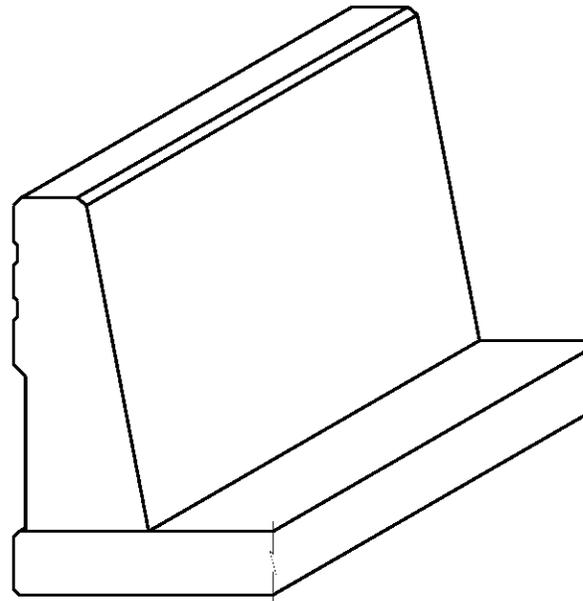


Figure 86: T80SS Rail

Use	Current standard railing
Classification	Traffic
Description	Concrete parapet with single front slope and aesthetic reveals along exterior face
Approximate Period of Installation	2009 - Present
Nominal Height / Min. Height	42 in. / 42 in.

# T80TT Family

## T80TT

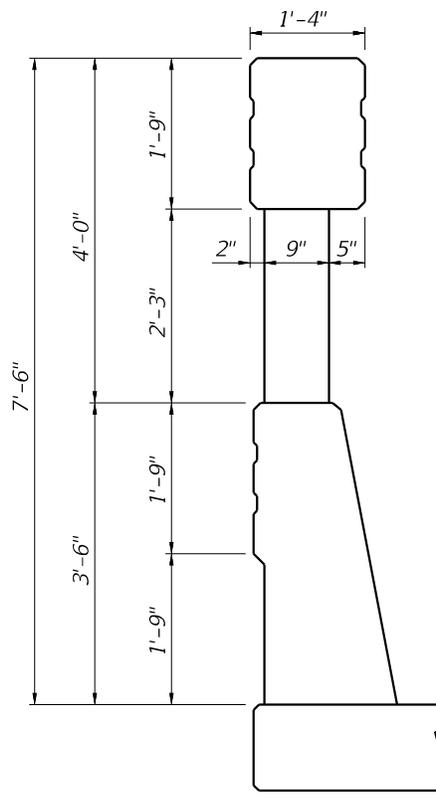


Figure 87: T80TT Rail

Use	Current standard railing (working drawing)
Classification	Traffic
Description	Continuous concrete railing with a 42 inch tall single slope base topped with a 48 inch tall wall and beam
Approximate Period of Installation	2012 - Present
Nominal Height / Min. Height	90 in. / 90 in.

TT

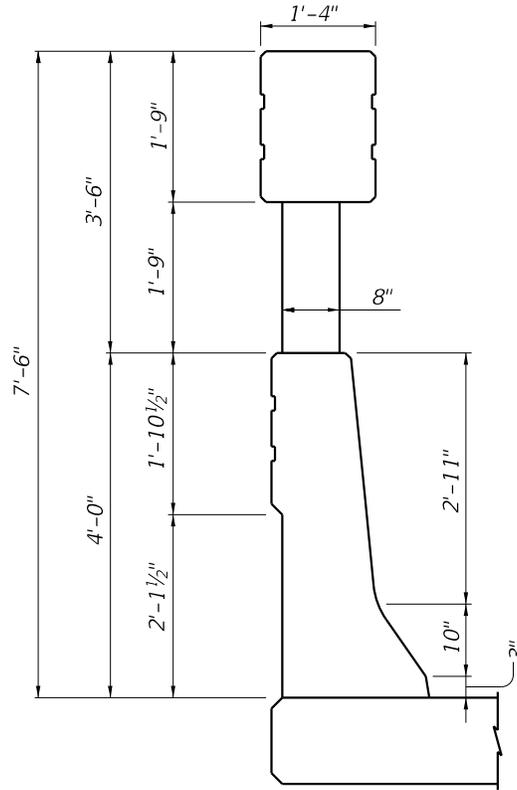


Figure 88: TT Rail

Use	Acceptable – No longer for new construction
Classification	Traffic
Description	Modified concrete safety-shaped parapet with concrete posts and concrete beam
Approximate Period of Installation	1985 – 2012
Nominal Height / Min. Height	90 in. / 90 in.

## Low-Profile Rail

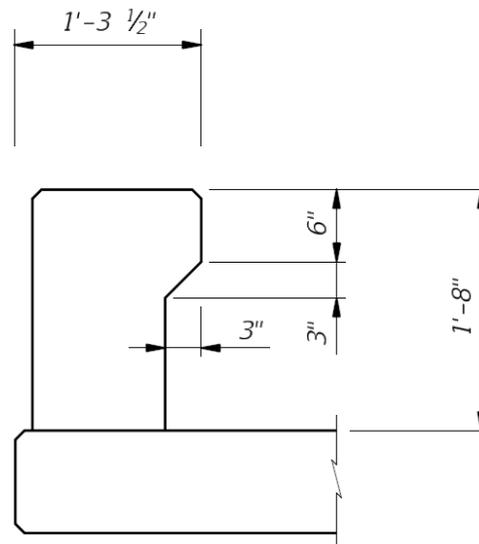


Figure 89: Low-Profile Rail

1

Use	Acceptable for low speed – No longer for new construction
Classification	Traffic
Description	Concrete Parapet
Approximate Period of Installation	2016 – 2018
Nominal Height / Min. Height	20 in. / 20 in.