

1) Sidewalk Transitions

- a: Located adjacent to the top of ramp as needed
- b: 48" minimum width
- c: 1.5% (1:66) maximum cross slope
- d: 4.5% (1:22) maximum parallel slope

2) Landings

- a: Located above or below ramp (as shown in details)
- b: 48" minimum clear space in all directions
- c: 1.5% (1:66) maximum parallel and cross slope

3) Ramps

- a: Located above pan or below landing
- b: 48" minimum width
- c: 1.5% (1:66) maximum cross slope
- d: 7.5% (1:13) maximum slope
- e: All ramps shall have a Detectable Warning Surface(truncated domes) and shall be placed on the ramp unless the ramp is connected to a pan.
- f: Transition to gutter shall be flush and free of abrupt changes
- g. Grade breaks shall be perpendicular to direction of ramp run

4) Pans

- a: Located below ramp (as shown in details)
- b: 60" minimum at back of pan
- c: 54" minimum from back of pan to flow line
- d: 1.5% (1:66) maximum cross slope
- e: On corners, pan boundaries are to be radial
- f: Transitions to gutter shall be flush and free of abrupt charges.
- g: All pans shall have a Detectable Warning Surface (truncated domes).

5) Flares

- a: Located adjacent to ramp (as shown in details)
- b: Required between ramps where there is no planter area
- c: Required on the exterior of ramps where there is an adjacent concrete sidewalk, regardless of obstacles
- d: Shall also have at least 24" long segment of straight curb located on each side of the curb ramp and within marked crossings.
- e: Generally triangular in nature
- f: 9% (1:11) maximum slope when not in the path of travel
- g: 7.5% (1:13) maximum slope when flare is in the path of travel

6) Gutters

- a: Adjacent to ramp or pan
- b: 4.5% (1:22) maximum slope for 4' out from flow line
- c: Transition to ramp or pan shall be flush and free of abrupt changes

7) Retaining Curbs

- a: Required adjacent to sidewalk transitions, landings, ramps and pans where the existing landscape (planter area) is 1" or higher at any point above the newly constructed curb ramp element
- b: Required for existing planter areas between ramps
- c: Retaining curbs are to have a 6" width and a vertical face
- d: Retaining curb foundations are to extend 8" below the adjacent ramp element surface
- e: Outside corners of retaining curbs must have a 6" radius

8) Detectable Warnings

- a: Placement of detectable warnings shall be per drawings AR - 3.2
- b: 6"-8" from the flow line
- c: 3' depth x full width
- d: Detectable Warning requirements, see AR - 3.1

General Notes:

1. Directional curb ramps are required unless otherwise approved by the Engineer.
2. All elements, except gutters and retaining curbs, must be constructed planar in nature with weakened plane joints scored between each element.
3. Opposing curb ramps shall align unless otherwise approved by the Engineer
4. These Elements, Definitions and Standards, General Details, and Standard Drawings shall apply to all curb and gutter types.
5. There are variations and adjustments that may be required upon the approval of the Engineer.
6. References to maximum cross slope of 1.5% are intended to allow for normal construction tolerances in an effort to keep the actual constructed cross slope to less than the required ADA standard of 2.0% maximum cross slope. Any installations of cross slopes greater than 2.0% will be unacceptable.


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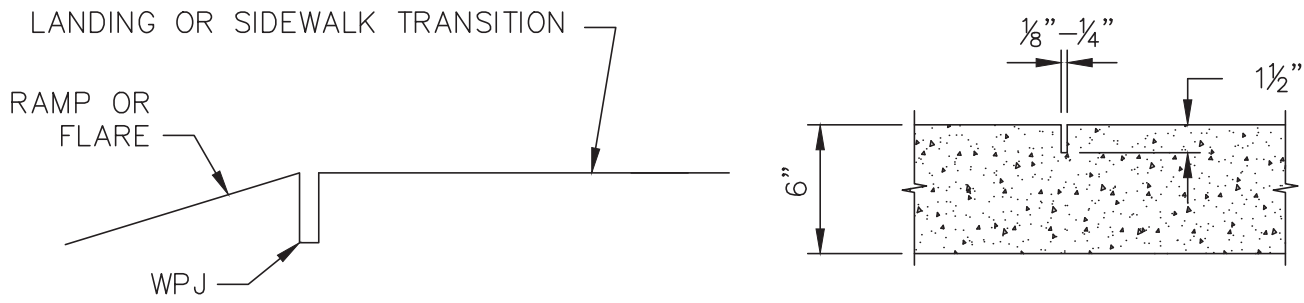
CITY OF ELK GROVE - PUBLIC WORKS

**CURB RAMP ELEMENTS
DEFINITIONS AND STANDARDS**

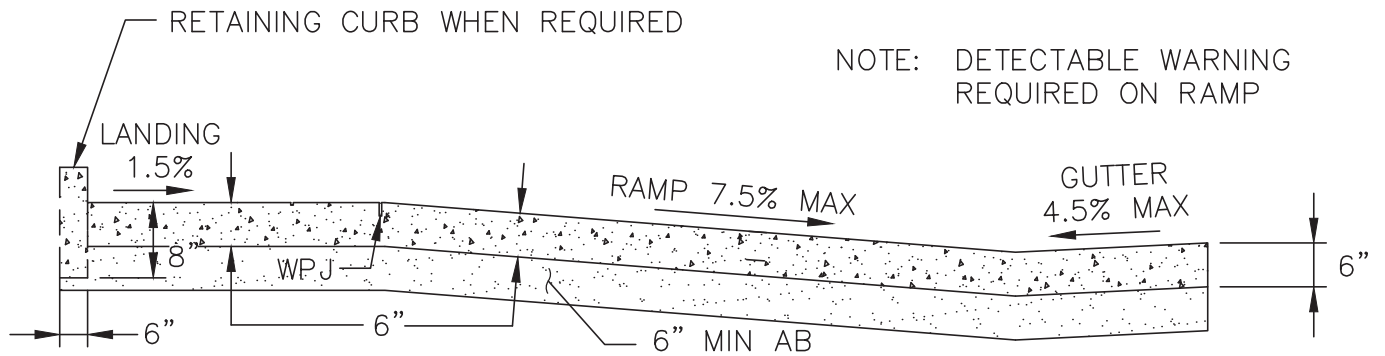
APPROVED BY:
Robert Murdoch 02/26/2021
CITY ENGINEER DATE

DRAWING NUMBER
AR - 2.0

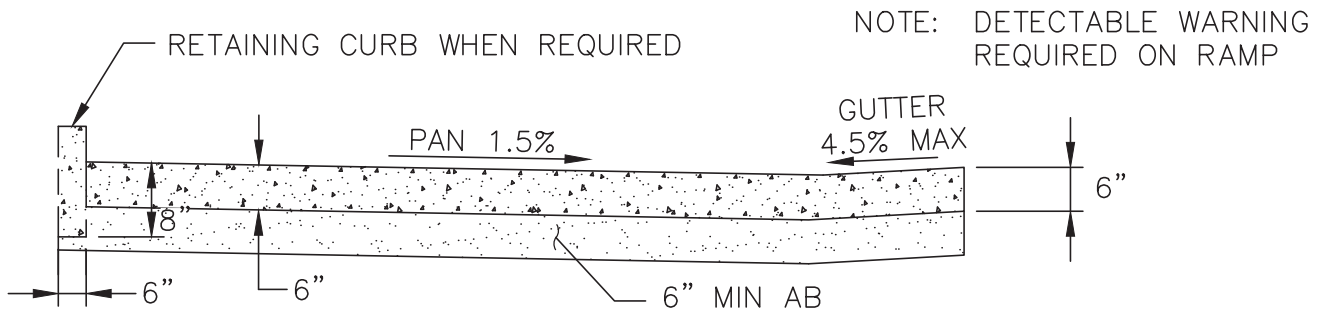




WEAKENED PLANE JOINT (WPJ)



TYPICAL CROSS SECTION FOR CENTER LINE OF FLARE, COMBO OR PLANTER STRIP CURB RAMP



TYPICAL CROSS SECTION FOR CENTER LINE OF PAN CURB RAMP

NOTES:

1. SURFACE OF RAMPS AND PANS SHALL HAVE A TRANSVERSE BROOM SURFACE TEXTURE ROUGHER THAN ADJACENT SIDEWALK.
2. COLORING SHALL BE ADDED TO NEW CONCRETE AS NECESSARY TO MATCH EXISTING COLOR.

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CURB RAMP GENERAL DETAILS

APPROVED BY:
Robert Murdoch
CITY ENGINEER

02/26/2021
DATE

DRAWING NUMBER
AR - 3.0



Approved CBC Detectable Warnings must meet the following Criteria:

1) **A written 5-year Product Warranty for Shape, Color Fastness, Sound-on-Cane Acoustic Quality, Resilience, and Attachment:**

- A) **Shape:**
Must be able to retain its original shape when subjected to varying degrees of temperature, moisture, pressure, or other stress.
- B) **Color Fastness:**
The ability of the material or coating to retain its original hue without fading or changing when exposed to environmental conditions.
- C) **Sound-on-Cane Acoustic Quality:**
The ability of a material to retain its original sound characteristics when impacted by an object.
- D) **Resilience:**
The ability of the material to absorb energy when deformed elastically without creating a permanent deformation.
- E) **Attachment:**
Attachment will not degrade significantly for at **least five (5) years after initial installation**-meaning the product maintains at least 90% of original product and bond. Bolt down products shall not be used.

2) **Confirmation - A written dimensional specifications:**

A written dimensional specification of the truncated domes and raised bars as specified in the codes - see below dimensions:

- A) **Base Diameter:** 0.9" to 0.92"
- B) **Top Diameter:** 0.45" to 0.47"
- C) **Center-to-Center Spacing:** 2.3" to 2.4"
- D) **Height:** 0.18" to 0.22"

3) **Light on Dark or Dark on Light**

70% contrast with adjoining surfaces - Contrast = $[(B1-B2)/B1] \times 100$ percent, where B1=light reflectance value (LRV) of the lighter area, B2=light reflectance value (LRV) of the darker area

4) **Methods of installations:**

Cast-in-place (required for all new construction) or Surface mount (retrofit only)

5) **Size:**

3' depth by full width

6) **Color:**

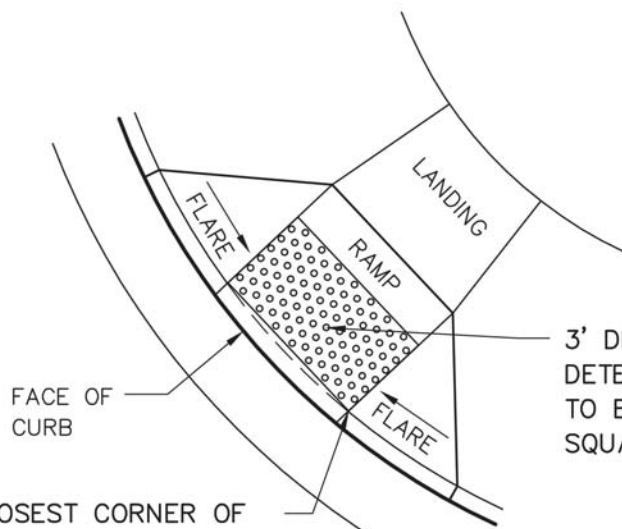
Color shall be Dark Gray #36118 of FED-STD-595 unless specified otherwise

7) **Approval:**

Armor-Tile or equal as approved by City

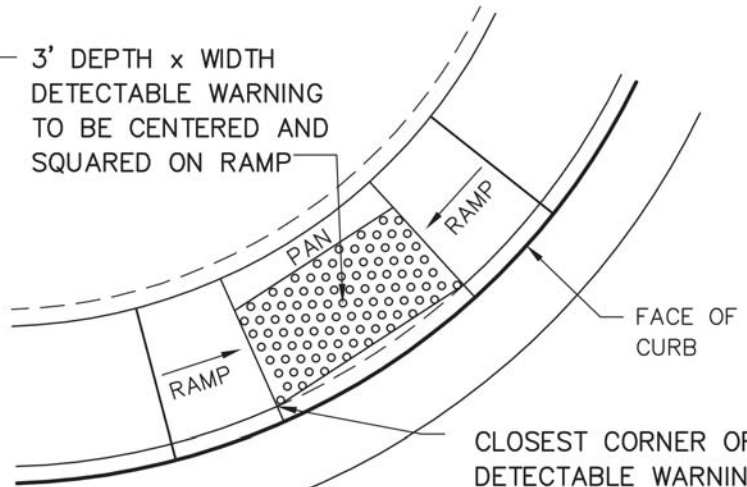


DATE: 09/22/2017		NOT TO SCALE		CITY OF ELK GROVE - PUBLIC WORKS		APPROVED BY: <i>Robert Muddick</i>	
				DETECTABLE WARNING SPECIFICATIONS		1/16/2020	
						DATE	
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1	LM	TW	07-18-2019			DRAWING NUMBER	
						AR - 3.1	

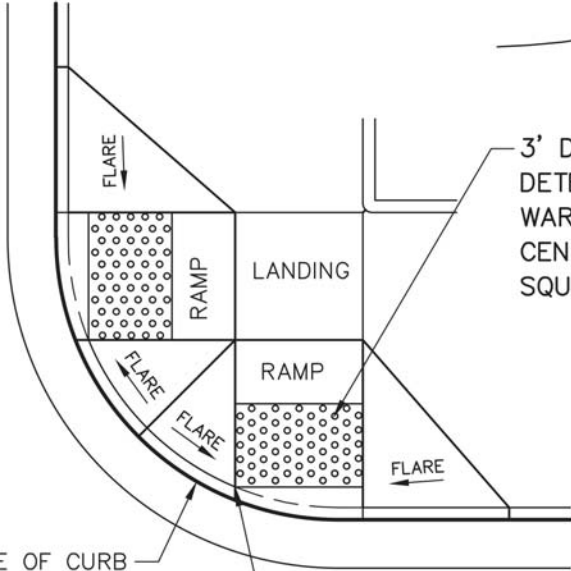


CLOSEST CORNER OF
DETECTABLE WARNING TO
STREET TO BE SET 6" -
8" FROM FACE OF CURB

3' DEPTH x WIDTH
DETECTABLE WARNING
TO BE CENTERED AND
SQUARED ON RAMP

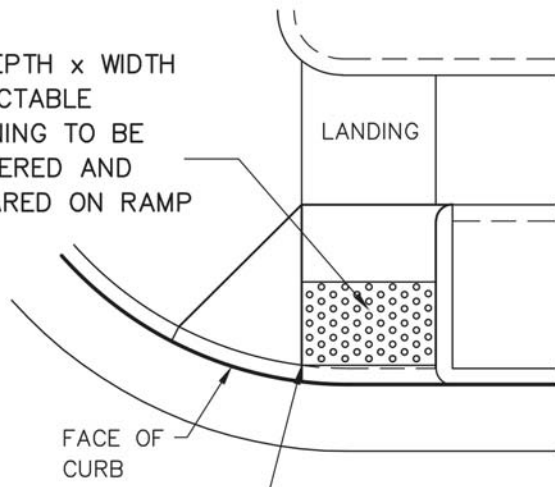


CLOSEST CORNER OF
DETECTABLE WARNING TO
STREET TO BE SET 6" -
8" FROM FACE OF CURB



FACE OF CURB

3' DEPTH x WIDTH
DETECTABLE
WARNING TO BE
CENTERED AND
SQUARED ON RAMP



FACE OF CURB

CLOSEST CORNER OF DETECTABLE
WARNING TO STREET TO BE SET 6" -
8" FROM FACE OF CURB

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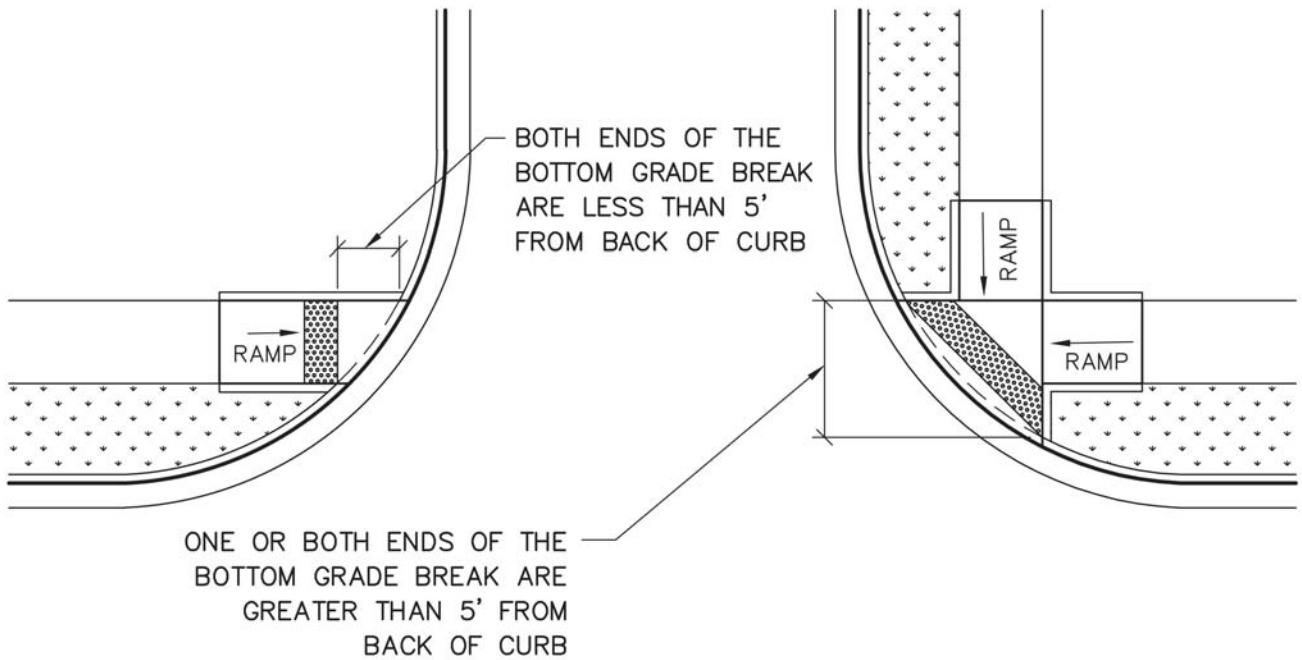
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APPROVED BY:
Robert M. ... 1/16/2020
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**DETECTABLE WARNING
STANDARD LAYOUT**



DRAWING NUMBER
AR - 3.2A



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CITY OF ELK GROVE - PUBLIC WORKS

**DETECTABLE WARNING
STANDARD LAYOUT**

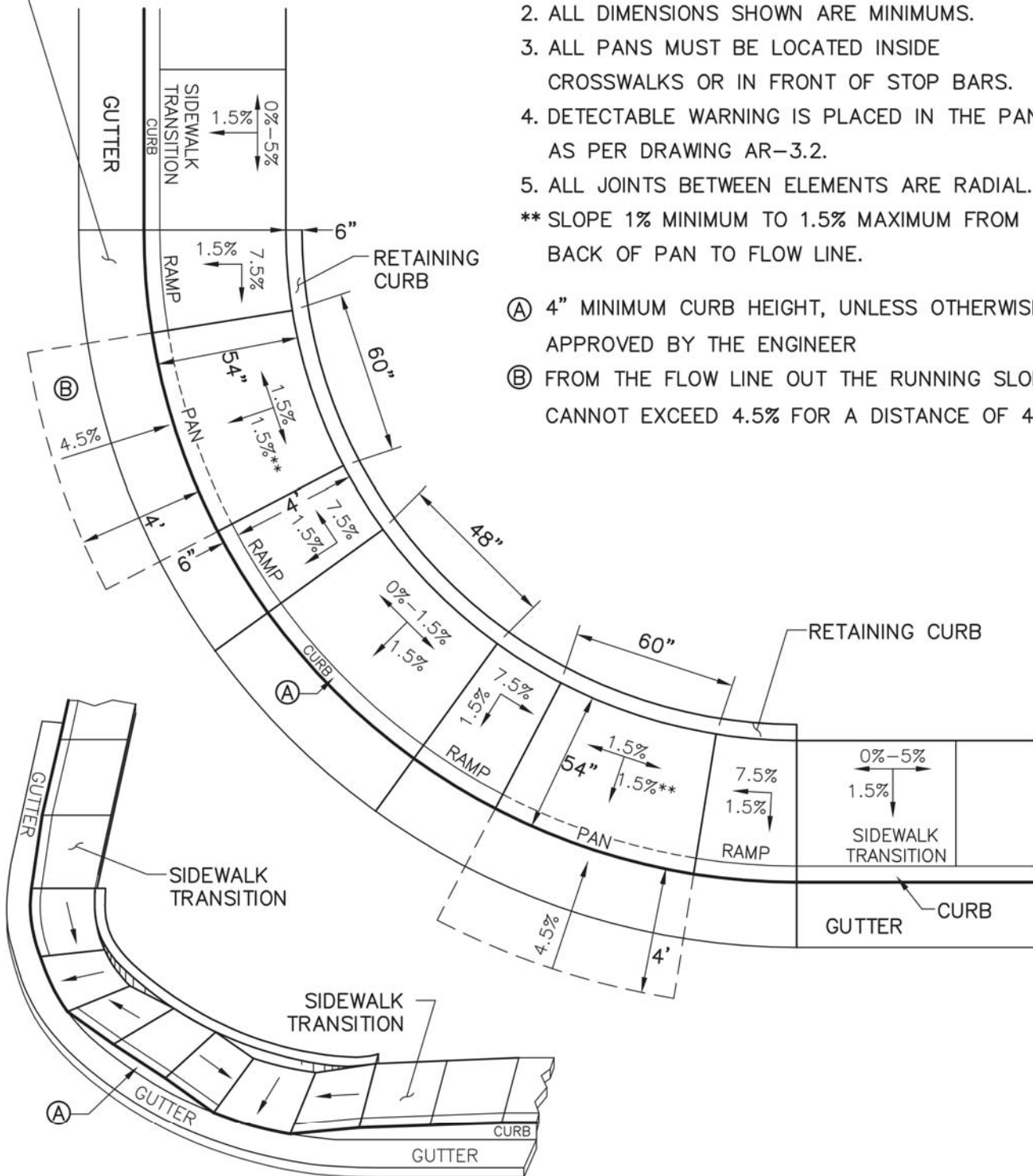
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Robert M. ...
CITY ENGINEER

1/16/2020
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DRAWING NUMBER
AR - 3.2B



TRANSITION GUTTER CROSS SLOPE TO 4.5% ALONG TOTAL LENGTH OF AREA OF RAMPED PORTION (TYP.)



NOTES:

1. ALL SLOPES SHOWN ARE MAXIMUMS.
 2. ALL DIMENSIONS SHOWN ARE MINIMUMS.
 3. ALL PANS MUST BE LOCATED INSIDE CROSSWALKS OR IN FRONT OF STOP BARS.
 4. DETECTABLE WARNING IS PLACED IN THE PAN AS PER DRAWING AR-3.2.
 5. ALL JOINTS BETWEEN ELEMENTS ARE RADIAL.
- ** SLOPE 1% MINIMUM TO 1.5% MAXIMUM FROM BACK OF PAN TO FLOW LINE.
- (A) 4" MINIMUM CURB HEIGHT, UNLESS OTHERWISE APPROVED BY THE ENGINEER
- (B) FROM THE FLOW LINE OUT THE RUNNING SLOPE CANNOT EXCEED 4.5% FOR A DISTANCE OF 4'.

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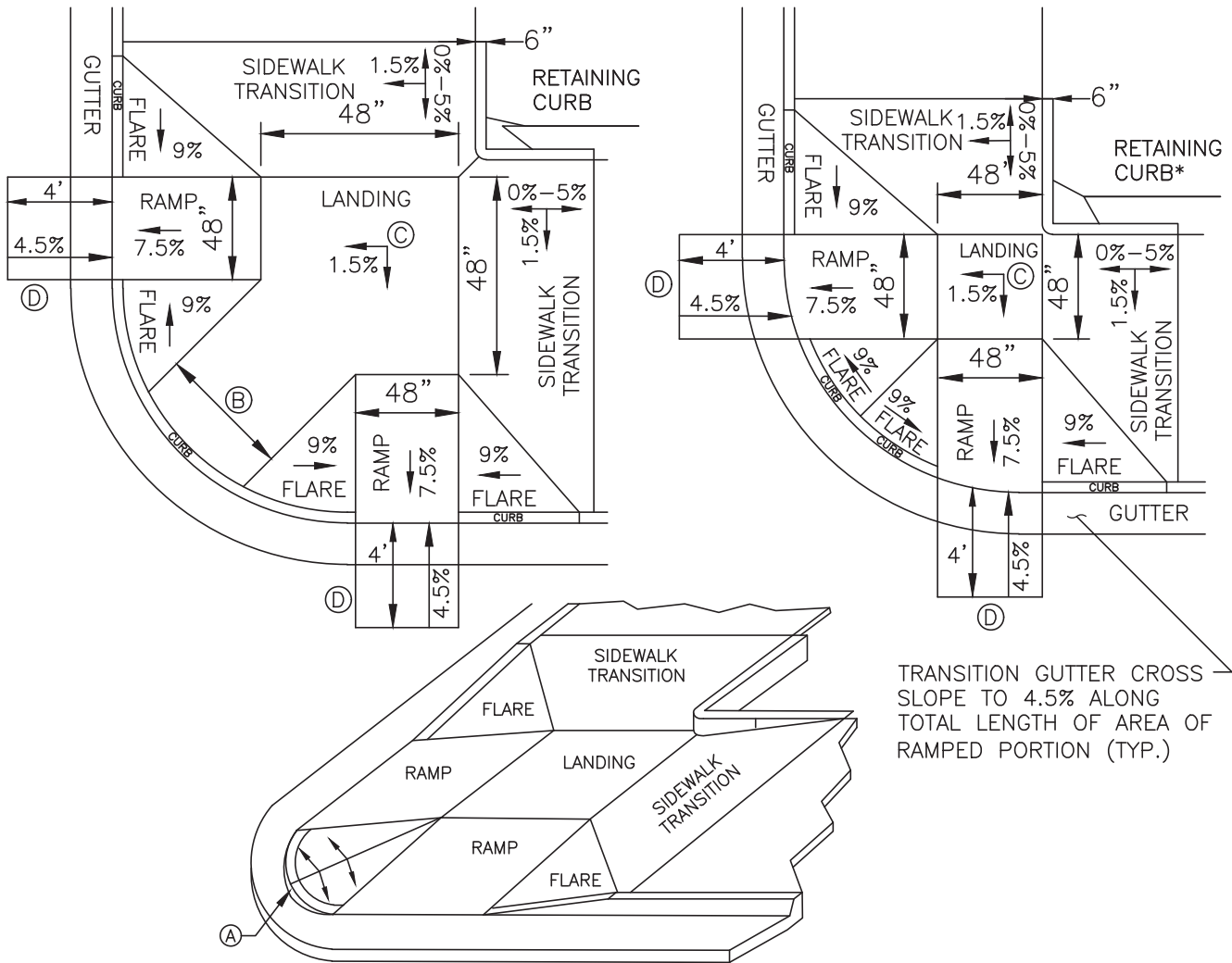
DUAL PARALLEL CURB RAMPS

APPROVED BY:
Robert M. ... 1/16/2020
CITY ENGINEER DATE

DRAWING NUMBER
AR - 4.1



1. ALL SLOPES SHOWN ARE MAXIMUMS.
 2. ALL DIMENSIONS SHOWN ARE MINIMUMS.
 3. THE RAMP MUST BE LOCATED INSIDE CROSSWALKS OR PRIOR TO STOP BARS.
 4. DETECTABLE WARNING SURFACE IS PLACED IN THE RAMP PER STANDARD DRAWING AR-3.2.
 5. IF THE FLARE IS IN THE PATH OF TRAVEL THEN THE SLOPE SHALL NOT EXCEED 7.5%.
- (A) 4" MINIMUM CURB HEIGHT DESIRABLE - 9% MAX SLOPE CONTROLS CURB HEIGHT, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- (B) NO MINIMUM DIMENSION. FLARES CAN INTERSECT.
- (C) ALL RAMPS WILL HAVE A MINIMUM OF 48" x 48" LANDING. TWO RAMPS CAN SHARE ONE LANDING.
- (D) FROM THE FLOW LINE OUT THE RUNNING SLOPE CANNOT EXCEED 4.5% FOR A DISTANCE OF 4'.



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CITY OF ELK GROVE - PUBLIC WORKS

**DUAL FLARE CURB RAMPS
WITH ATTACHED SIDEWALK**

APPROVED BY:
Robert Murdoch
CITY ENGINEER

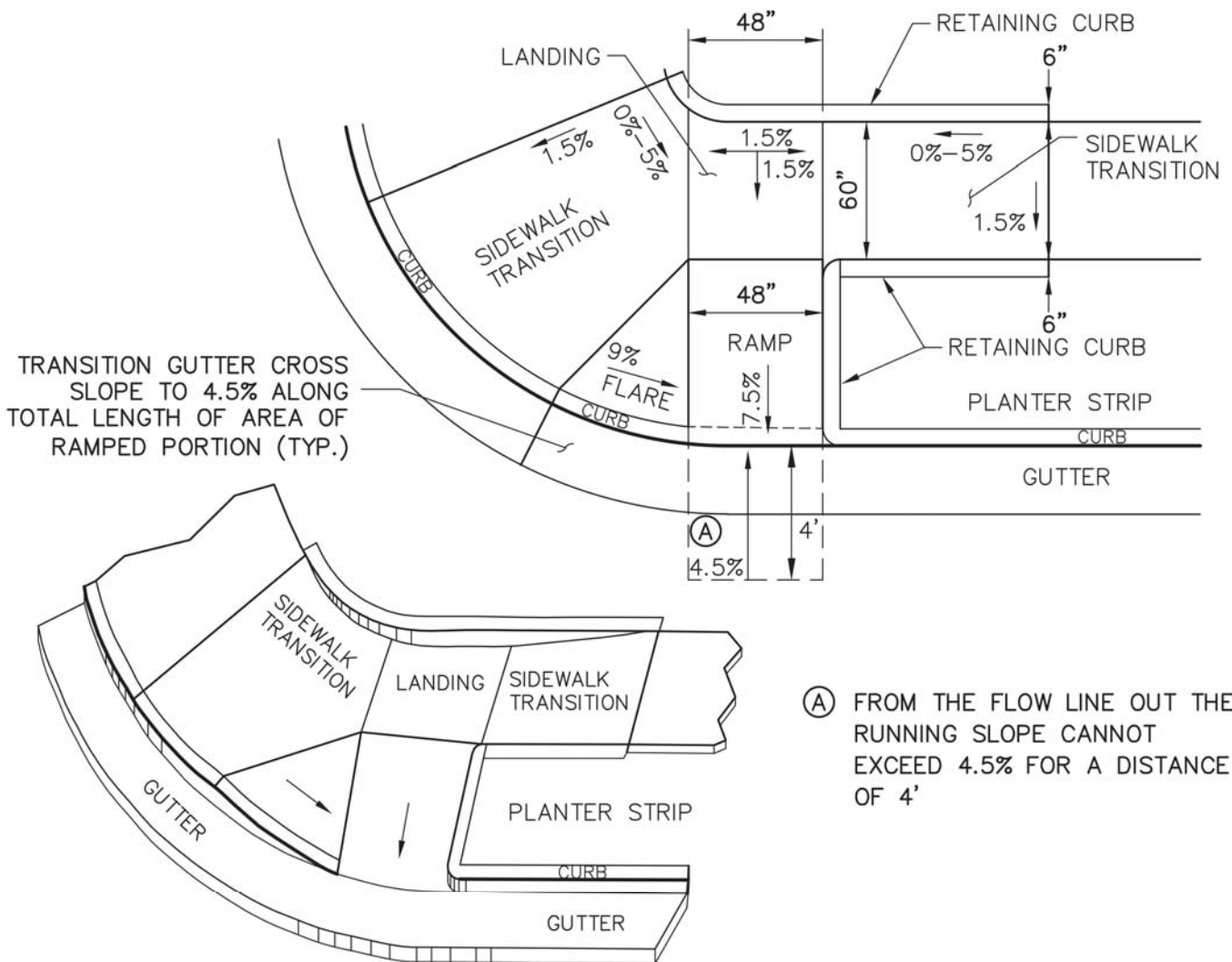
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AR - 4.3



NOTES:

1. ALL SLOPES SHOWN ARE MAXIMUMS.
2. ALL DIMENSIONS SHOWN ARE MINIMUMS.
3. RAMP MUST BE LOCATED INSIDE CROSSWALKS OR IN FRONT OF STOP BARS
4. DETECTABLE WARNING SURFACE IS PLACED IN THE RAMP PER STANDARD DRAWING AR-3.2.
5. ALL JOINTS BETWEEN ELEMENTS, EXCEPT BETWEEN RAMP AND FLARE ARE RADIAL. RAMP WIDTH REMAINS CONSTANT.
6. IF THE FLARE IS IN THE PATH OF TRAVEL THEN THE SLOPE SHALL NOT EXCEED 7.5%.
7. SINGLE RAMPS SHALL BE CONSTRUCTED PARALLEL TO CROSSING DIRECTION.




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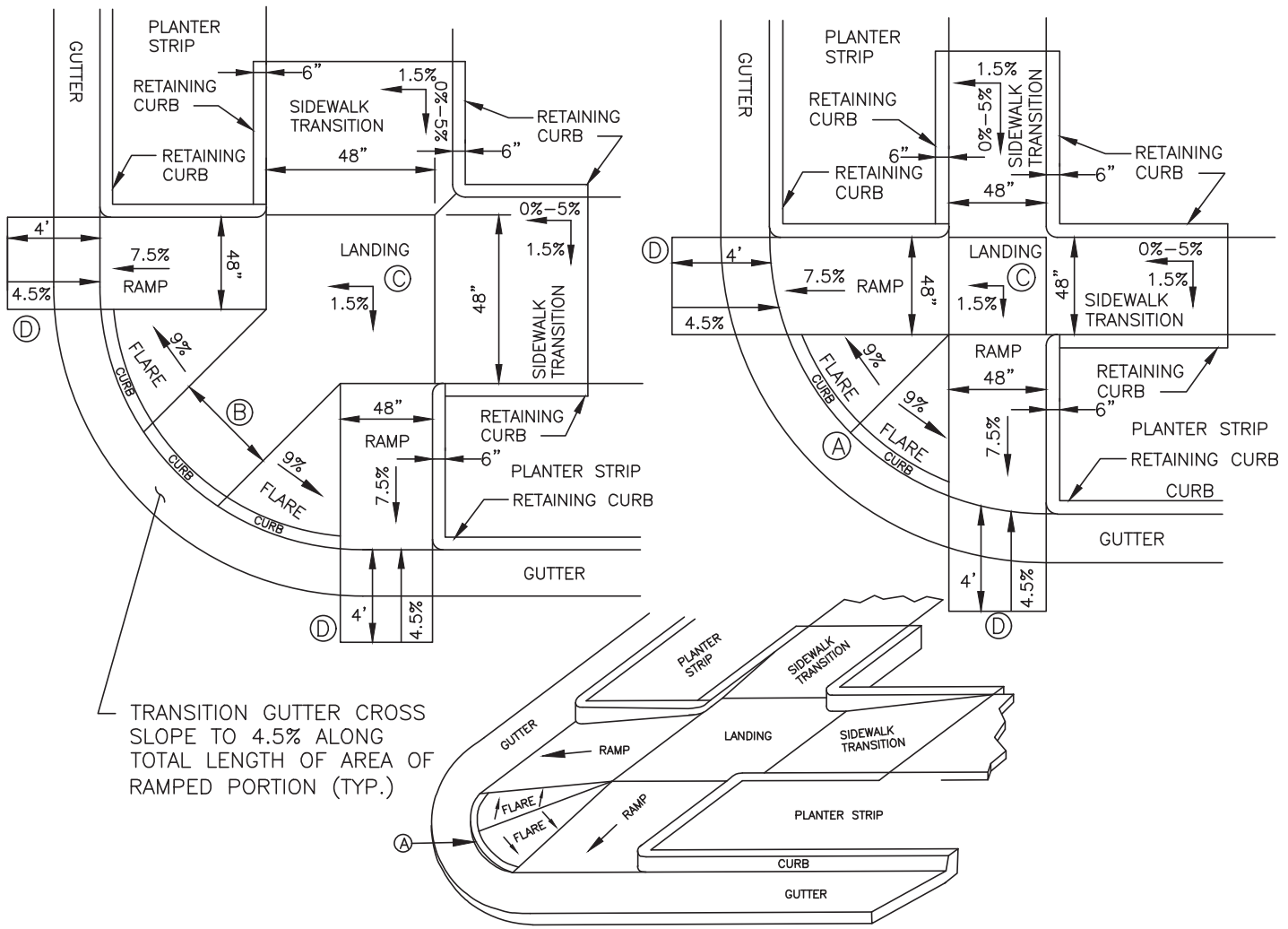
SINGLE PERPENDICULAR CURB RAMP

APPROVED BY:
Robert M. ... 1/16/2020
CITY ENGINEER DATE

DRAWING NUMBER
AR - 4.4



1. ALL SLOPES SHOWN ARE MAXIMUMS.
 2. ALL DIMENSIONS SHOWN ARE MINIMUMS.
 3. THE RAMP MUST BE LOCATED INSIDE CROSSWALKS OR IN FRONT OF STOP BARS.
 4. DETECTABLE WARNING IS PLACED IN THE RAMP AND AS PER DRAWING AR-3.2.
 5. IF THE FLARE IS IN THE PATH OF TRAVEL THEN THE SLOPE SHALL NOT EXCEED 7.5%.
- (A) 4" MINIMUM CURB HEIGHT DESIRABLE - 9% MAX SLOPE CONTROLS CURB HEIGHT, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- (B) NO. MINIMUM DIMENSION. FLARES CAN INTERSECT.
- (C) ALL RAMPS WILL HAVE A MINIMUM OF 48"x48" LANDING. TWO RAMPS CAN SHARE ONE LANDING.
- (D) FROM THE FLOW LINE OUT THE RUNNING SLOPE CANNOT EXCEED 4.5% FOR A DISTANCE OF 4'.



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CITY OF ELK GROVE - PUBLIC WORKS

**DUAL FLARED PERPENDICULAR CURB
RAMPS WITH DETACHED SIDEWALK**

APPROVED BY:
Robert Murdoch
CITY ENGINEER

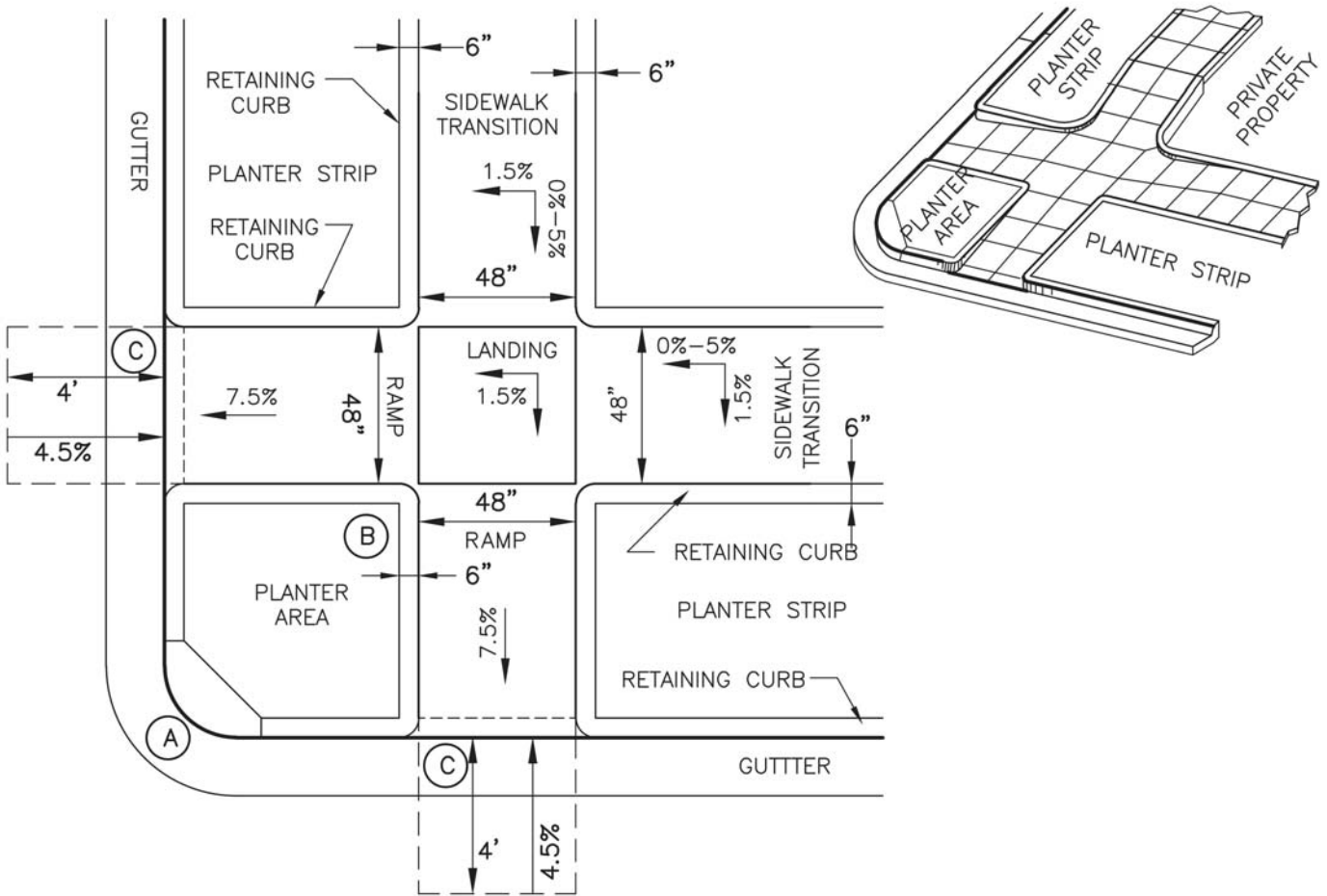
02/26/2021
DATE

DRAWING NUMBER
AR - 4.5



NOTES:

1. ALL SLOPES SHOWN ARE MAXIMUMS.
 2. ALL DIMENSIONS SHOWN ARE MINIMUMS.
 3. ALL RAMPS MUST BE LOCATED INSIDE CROSSWALKS OR IN FRONT OF STOP BARS.
 4. DETECTABLE WARNING IS PLACED IN THE RAMP AND AS PER DRAWING AR-3.2.
 5. ADD LAMP BLACK TO NEW CONCRETE AS DIRECTED BY ENGINEER. MATCH EXISTING COLOR.
- (A) STANDARD CURB HEIGHT TO MATCH EXISTING.
- (B) TOP OF RETAINING CURB TO MATCH ADJACENT RETAINING CURB ELEVATIONS CAN BE FLUSH WITH LANDING.
- (C) FROM THE FLOW LINE OUT THE RUNNING SLOPE CANNOT EXCEED 4.5% FOR A DISTANCE OF 4'.




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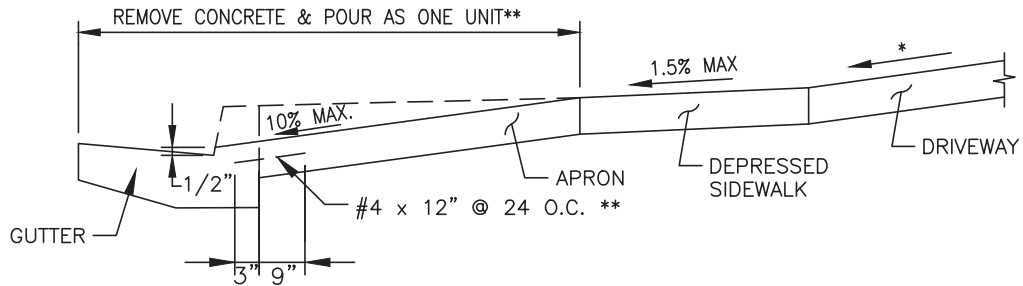
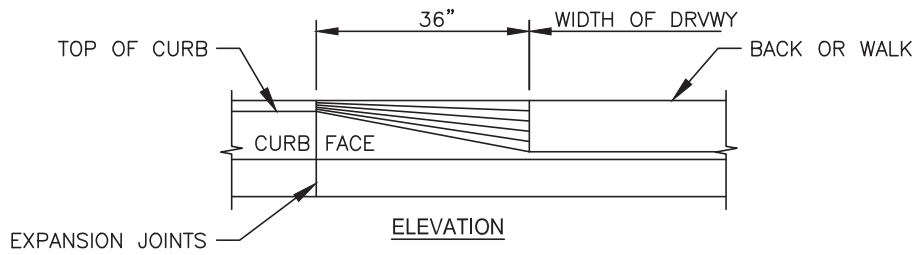
CITY OF ELK GROVE - PUBLIC WORKS

**DUAL PERPENDICULAR CURB
RAMPS WITH DETACHED SIDEWALK**

APPROVED BY:
Robert M. ... 1/16/2020
CITY ENGINEER DATE

DRAWING NUMBER
AR - 4.6

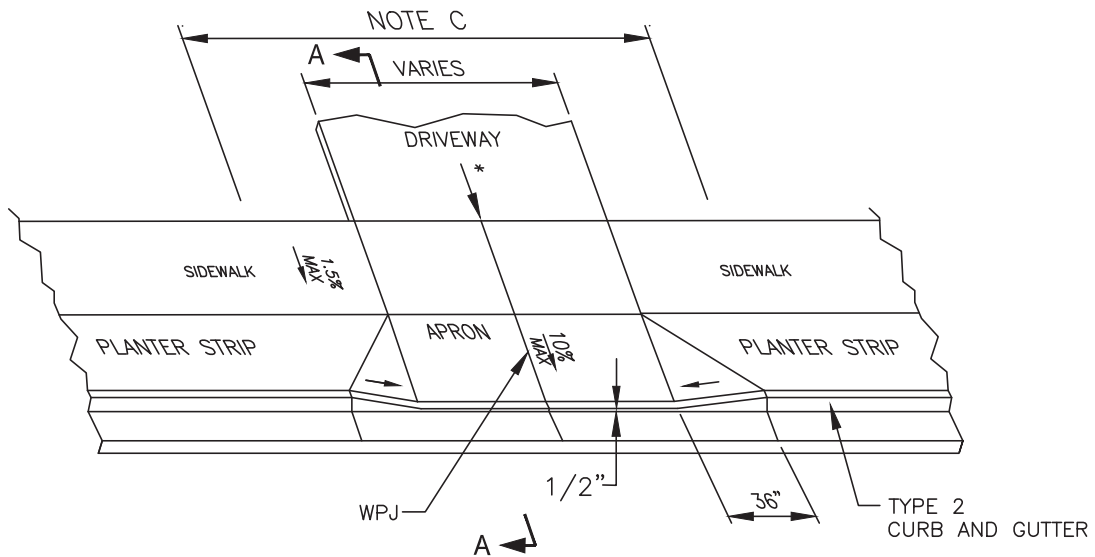




SECTION A-A WITH VERTICAL CURB

NOTES:

- A. DRIVEWAY WIDTH AS PER CITY CODE. * SEE SECTION 4-7 OF THE IMPROVEMENT STANDARDS
- B. WEAKENED PLANE JOINTS (WPJ) REQUIRED ON CENTERLINE FOR DRIVEWAYS 10' TO 20' WIDE. DRIVEWAYS 22' TO 35' WIDE SHALL HAVE TWO WPJ EVENLY SPACED AT $\frac{1}{3}$ AND $\frac{2}{3}$ POINTS. ** IF CURB & GUTTER ARE POURED SEPARATE OF APRON THEN DOWELS ARE REQUIRED AT BACK OF CURB.
- C. THICKNESS OF APRONS SHALL BE 6".



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CITY OF ELK GROVE - PUBLIC WORKS

**DETACHED SIDEWALK
DRIVEWAY DETAIL**

APPROVED BY:
Robert Murdoch 02/26/2021
CITY ENGINEER DATE

DRAWING NUMBER
AR - 4.8

