



Chandler • Arizona
Where Values Make The Difference

MEMORANDUM

Case # 16-05

DATE: July 6, 2016

TO: MAG Specifications and Details Committee Members

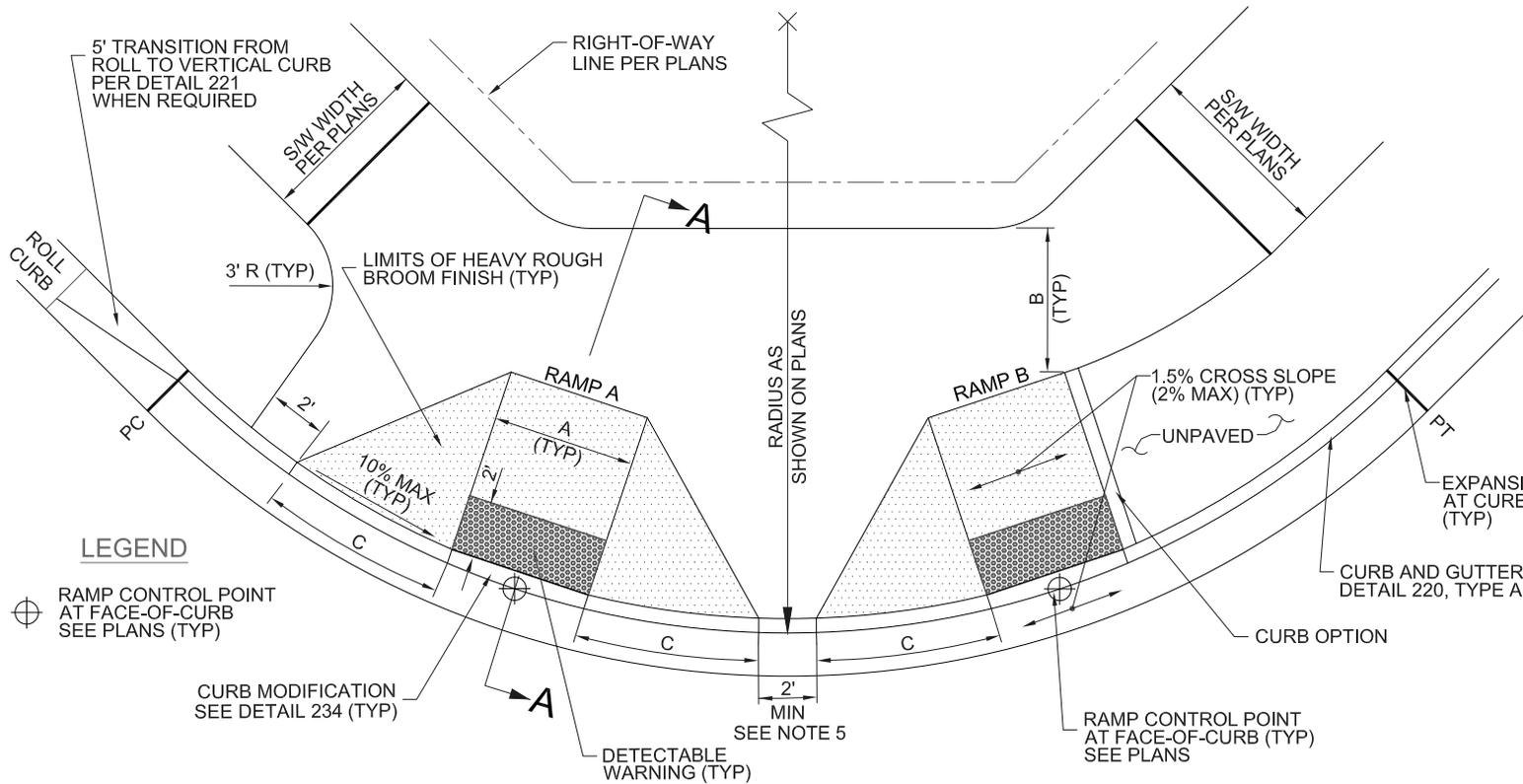
FROM: Warren White, City of Chandler Representative

SUBJECT: Proposed New Dual Curb Ramp Details and Revisions to Section 340

Purpose: Incorporate new standard details for dual curb ramps (radial and directional) and revisions to Section 340 for maximum grade allowances meeting latest ADA requirements. The intention is for construction details to have the “build to” slopes/grades that will allow for tolerance while the specification provides the maximum limits for acceptance.

Revisions:

- General revisions from working group discussion including adding Legend, Ramp A/B label, revisions to table headings and lengths. Section A-A revised to reference Note 2 and 12” Transition Thickness clarified.
- Added Details 236-3 and 237-3 for 20 ft return and options to keep wings within return. Revised detail series titles for 25’ to 35’ radii and 20’. Have not yet added detached detail for 20’ R (TBD).
- No changes to Section 340.3.9 Tolerances from previous package.
- Added revisions to Section 340.5 Measurement provided by Bob Herz. Mainly clarification of measurement for types of curb ramps and number of curb ramps contained within the return.



CURB HEIGHT	RAMP LENGTH	WING LENGTH (C)
6"	6.5'	6.5'
7"	7.5'	7.5'

CURB RAMP RADIUS (F/C)	RAMP WIDTH (A)	WALKWAY WIDTH (B)
25' AND GREATER	5' MIN	*5' MIN

*4' MIN WHEN RESTRICTIVE CONDITIONS EXIST.

LEGEND

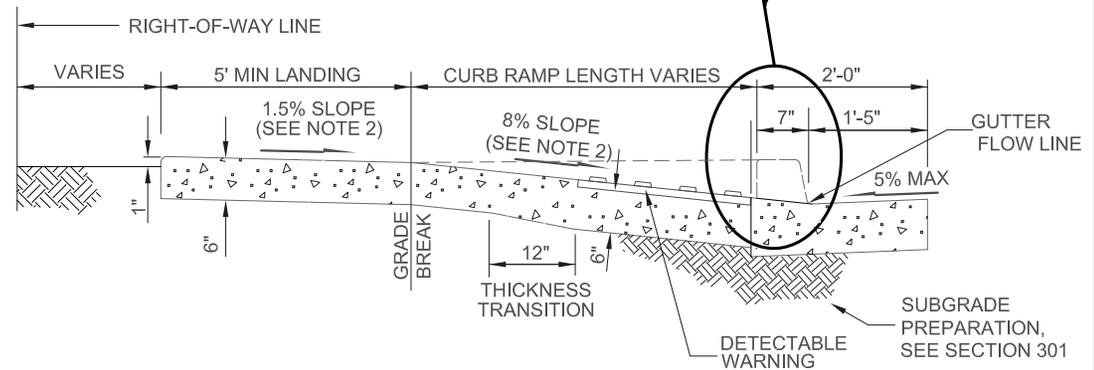
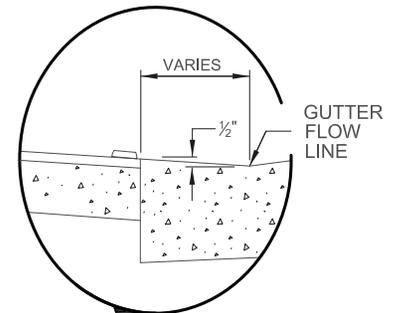
⊕ RAMP CONTROL POINT AT FACE-OF-CURB SEE PLANS (TYP)

⊕ CURB MODIFICATION SEE DETAIL 234 (TYP)

⊕ DETECTABLE WARNING (TYP)

NOTES:

1. CLASS 'A' CONCRETE PER SECTION 725, PC TO PT.
2. CONSTRUCTION INCLUDING EXPANSION JOINTS AND MAXIMUM SLOPES SHALL CONFORM TO SECTION 340.
3. SIDEWALK SURFACE TO MATCH 1.5% SLOPE FROM TOP OF CURB.
4. DETECTABLE WARNING IS TO COMPLY WITH THE JURISDICTIONAL AGENCY'S REQUIREMENTS.
5. DISTANCE BETWEEN RAMPS MAY BE ADJUSTED TO IMPROVE CROSSING ALIGNMENT WITH OPPOSING RAMP WHEN ALLOWED BY THE JURISDICTIONAL AGENCY.
6. SPECIAL DESIGN IS REQUIRED FOR GUTTER GRADES GREATER THAN 2%.



SECTION A-A

DETAIL NO.

236-2



STANDARD DETAIL
ENGLISH

DUAL CURB RAMP (RADIAL, 25' - 35' R)
DETACHED SIDEWALK

PROPOSED

01-01-2017

DETAIL NO.

236-2

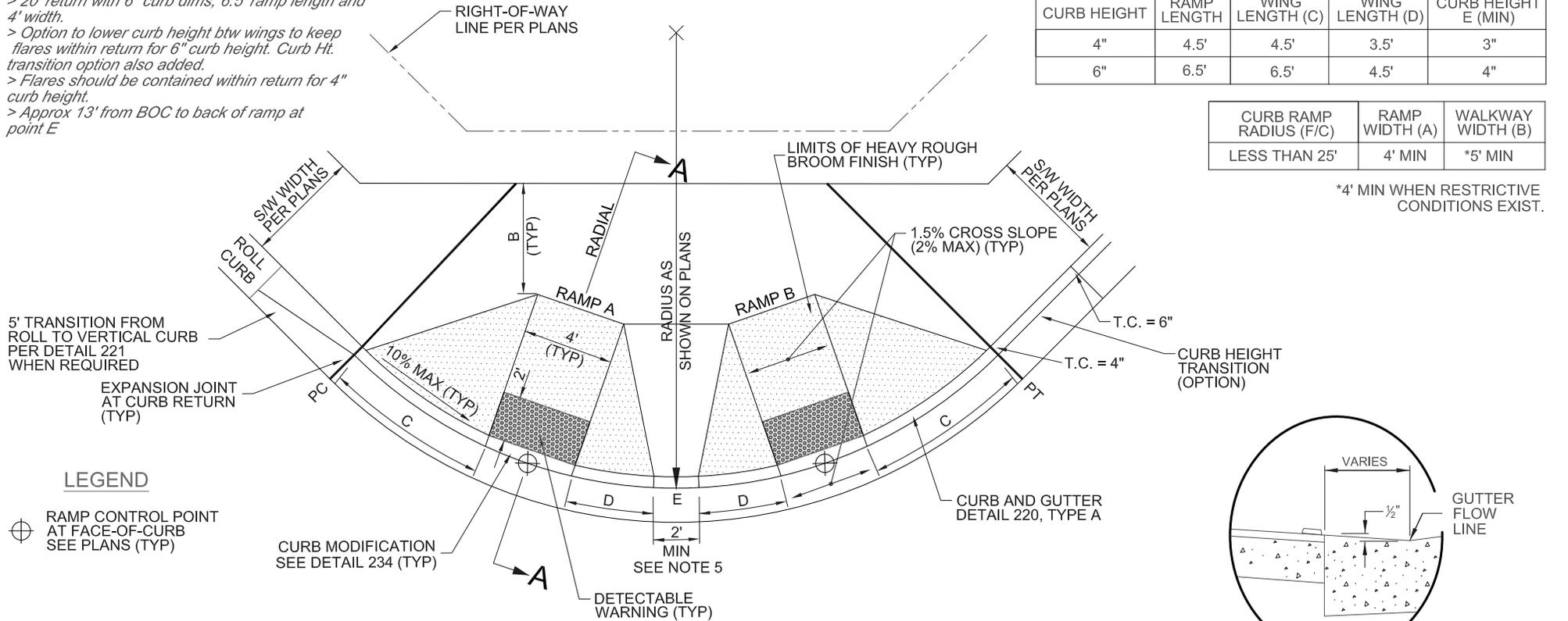
DRAFT NOTES:

- > 20' return with 6" curb dims, 6.5' ramp length and 4' width.
- > Option to lower curb height btw wings to keep flares within return for 6" curb height. Curb Ht. transition option also added.
- > Flares should be contained within return for 4" curb height.
- > Approx 13' from BOC to back of ramp at point E

CURB HEIGHT	RAMP LENGTH	WING LENGTH (C)	WING LENGTH (D)	CURB HEIGHT E (MIN)
4"	4.5'	4.5'	3.5'	3"
6"	6.5'	6.5'	4.5'	4"

CURB RAMP RADIUS (F/C)	RAMP WIDTH (A)	WALKWAY WIDTH (B)
LESS THAN 25'	4' MIN	*5' MIN

*4' MIN WHEN RESTRICTIVE CONDITIONS EXIST.



5' TRANSITION FROM ROLL TO VERTICAL CURB PER DETAIL 221 WHEN REQUIRED

EXPANSION JOINT AT CURB RETURN (TYP)

LEGEND

⊕ RAMP CONTROL POINT AT FACE-OF-CURB SEE PLANS (TYP)

CURB MODIFICATION SEE DETAIL 234 (TYP)

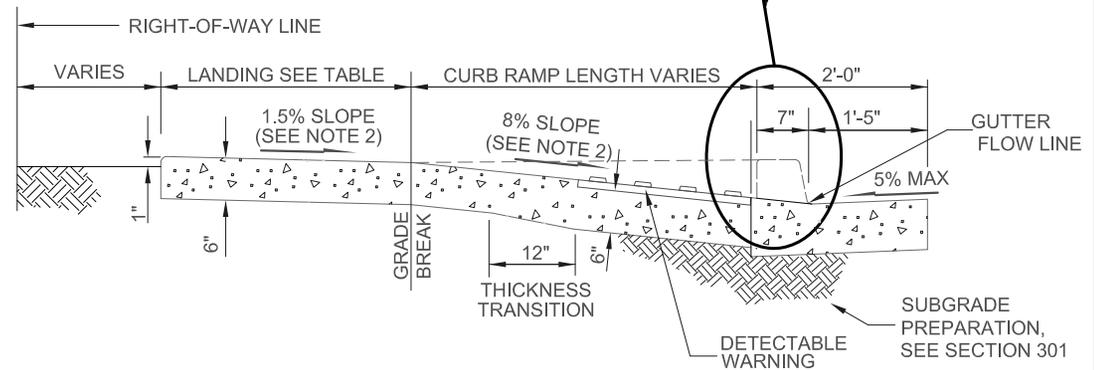
DETECTABLE WARNING (TYP)

CURB AND GUTTER DETAIL 220, TYPE A

T.C. = 4" CURB HEIGHT TRANSITION (OPTION)

NOTES:

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3. SIDEWALK SURFACE TO MATCH 1.5% SLOPE FROM TOP OF CURB.
4. DETECTABLE WARNING IS TO COMPLY WITH THE JURISDICTIONAL AGENCY'S REQUIREMENTS.
5. DISTANCE BETWEEN RAMPS MAY BE ADJUSTED TO IMPROVE CROSSING ALIGNMENT WITH OPPOSING RAMP WHEN ALLOWED BY THE JURISDICTIONAL AGENCY.
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SECTION A-A

DETAIL NO.

236-3



STANDARD DETAIL
ENGLISH

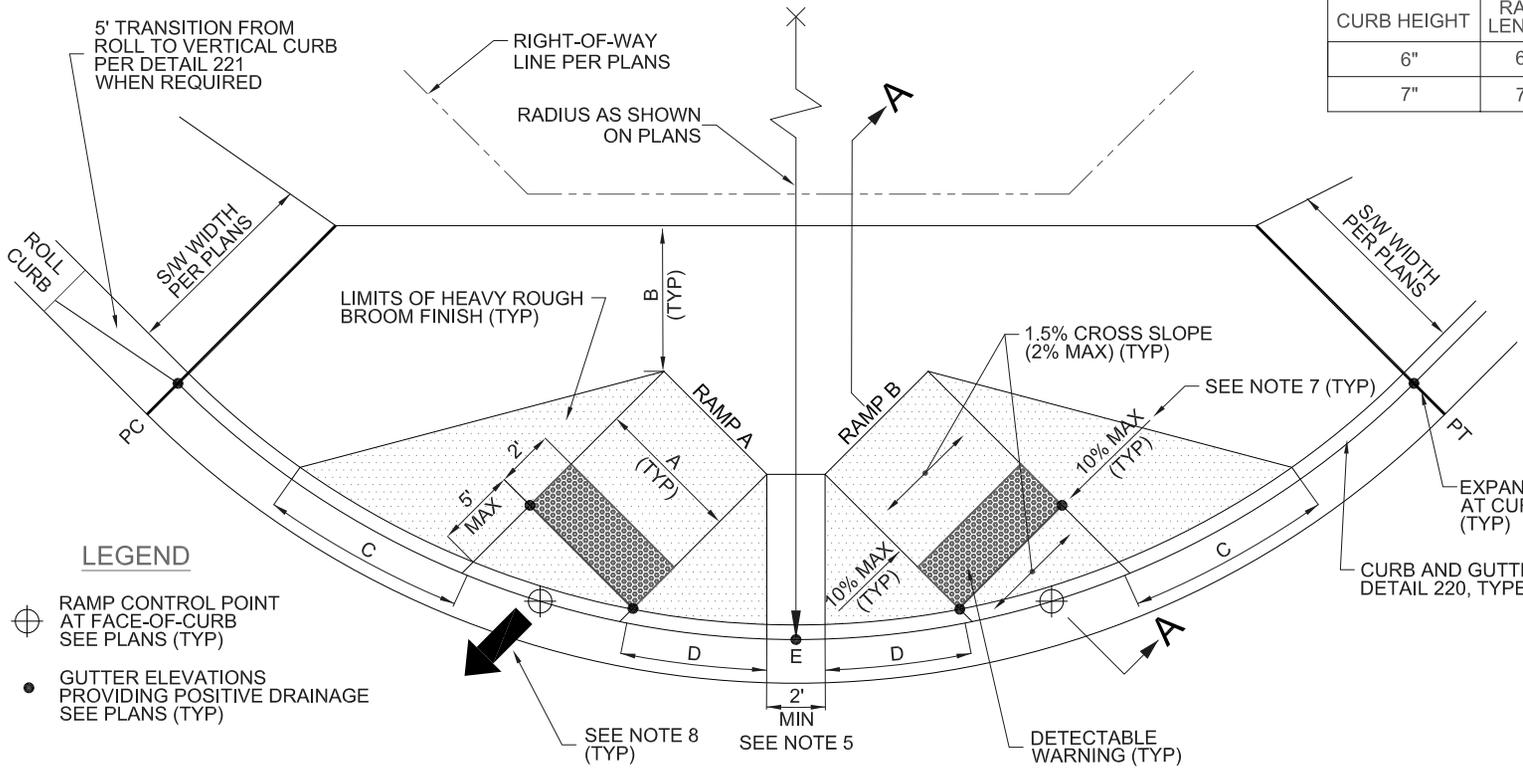
DUAL CURB RAMP (RADIAL, 20' R)
ATTACHED SIDEWALK

PROPOSED

01-01-2017

DETAIL NO.

236-3



CURB HEIGHT	RAMP LENGTH	WING LENGTH (C)	WING LENGTH (D)	CURB HEIGHT E (MIN)
6"	6.5'	6.5'	4.5'	4"
7"	7.5'	7.5'	5.5'	4"

CURB RAMP RADIUS (F/C)	RAMP WIDTH (A)	WALKWAY WIDTH (B)
25' AND GREATER	5' MIN	*5' MIN

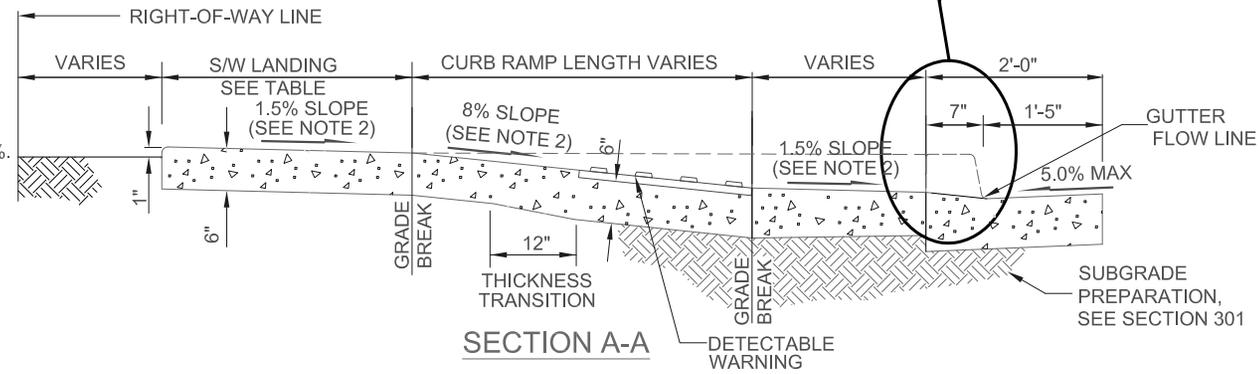
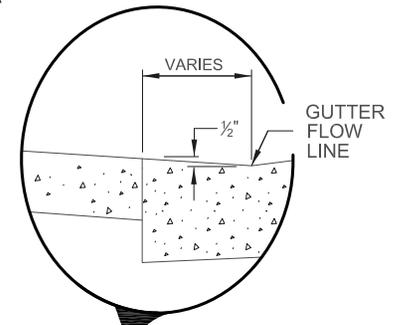
*4' MIN WHEN RESTRICTIVE CONDITIONS EXIST.

LEGEND

- ⊕ RAMP CONTROL POINT AT FACE-OF-CURB SEE PLANS (TYP)
- GUTTER ELEVATIONS PROVIDING POSITIVE DRAINAGE SEE PLANS (TYP)

NOTES:

1. CLASS 'A' CONCRETE PER SECTION 725, PC TO PT.
2. CONSTRUCTION INCLUDING EXPANSION JOINTS AND MAXIMUM SLOPES SHALL CONFORM TO SECTION 340.
3. SIDEWALK SURFACE TO MATCH 1.5% SLOPE FROM TOP OF CURB.
4. DETECTABLE WARNING IS TO COMPLY WITH THE JURISDICTIONAL AGENCY'S REQUIREMENTS.
5. DISTANCE BETWEEN RAMPS MAY BE ADJUSTED TO IMPROVE CROSSING ALIGNMENT WITH OPPOSING RAMP WHEN ALLOWED BY THE JURISDICTIONAL AGENCY.
6. SPECIAL DESIGN IS REQUIRED FOR GUTTER GRADES GREATER THAN 2%.
7. WING SLOPE SHALL NOT EXCEED 10% MEASURED PERPENDICULAR TO RAMP.
8. RAMP ALIGNMENT SHOULD CONNECT CONTROL POINT TO CONTROL POINT OF RECEIVING RAMP WITHIN 5 FEET.



DETAIL NO.
237-1

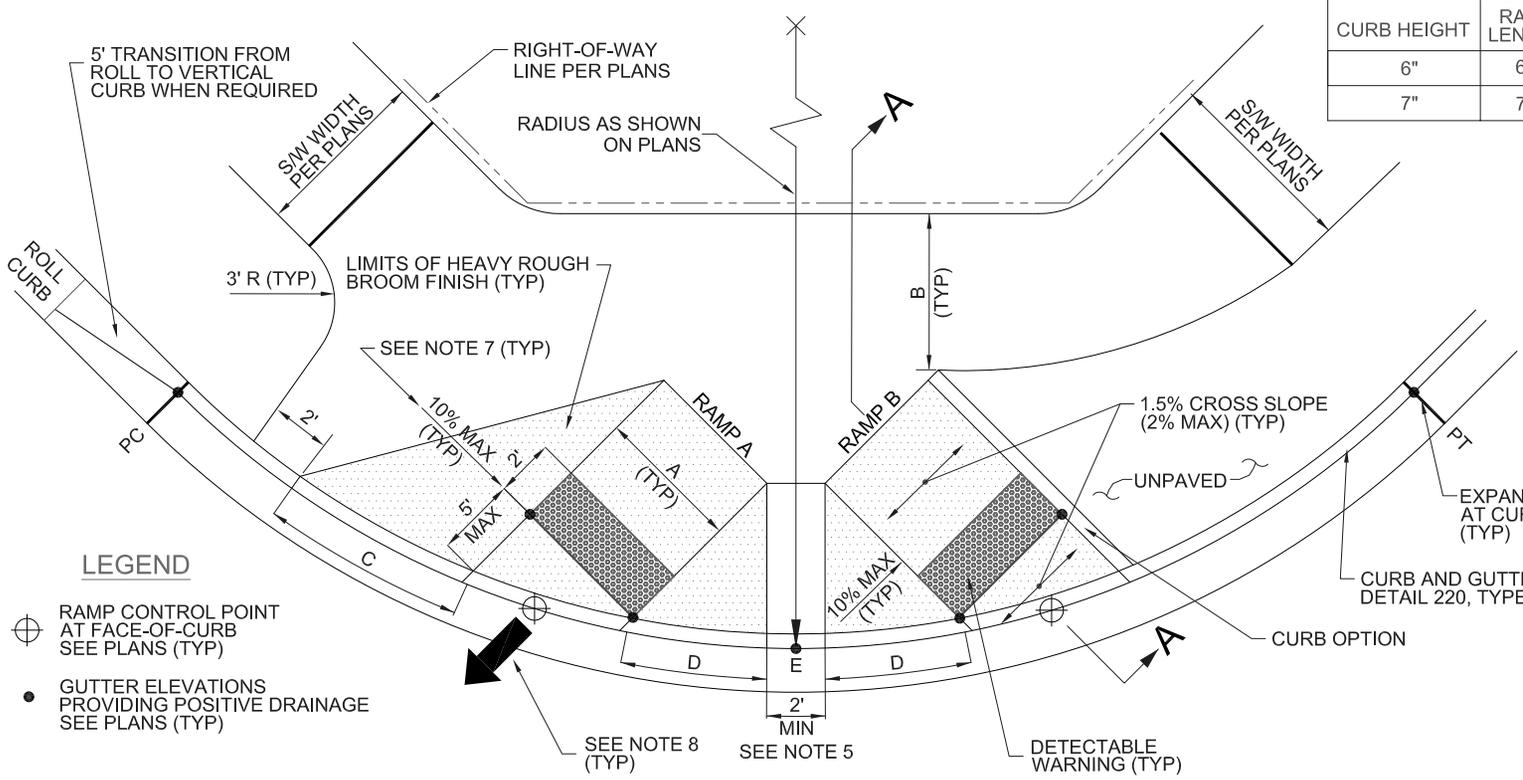


STANDARD DETAIL
ENGLISH

**DUAL CURB RAMP (DIRECTIONAL, 25' - 35'R)
ATTACHED SIDEWALK**

PROPOSED
01-01-2017

DETAIL NO.
237-1



CURB HEIGHT	RAMP LENGTH	WING LENGTH (C)	WING LENGTH (D)	CURB HEIGHT E (MIN)
6"	6.5'	6.5'	4.5'	4"
7"	7.5'	7.5'	5.5'	4"

CURB RAMP RADIUS (F/C)	RAMP WIDTH (A)	WALKWAY WIDTH (B)
25' AND GREATER	5' MIN	*5' MIN

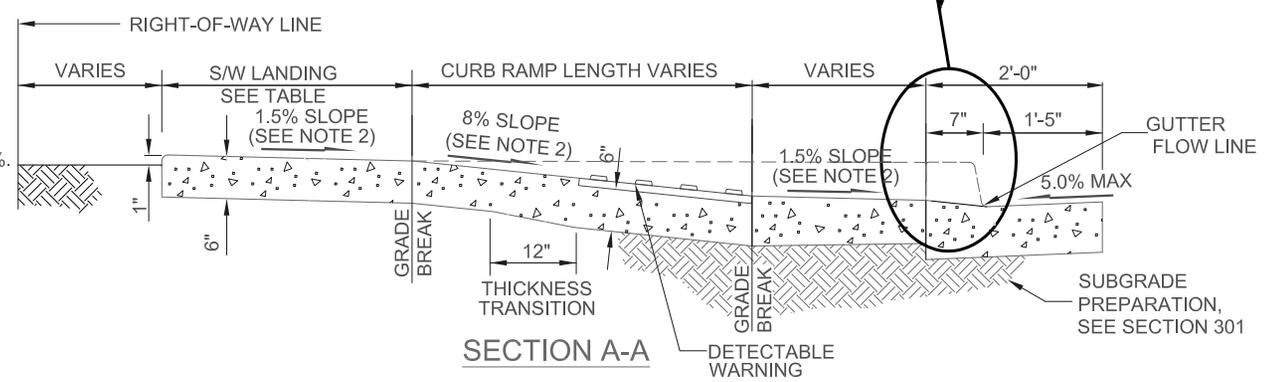
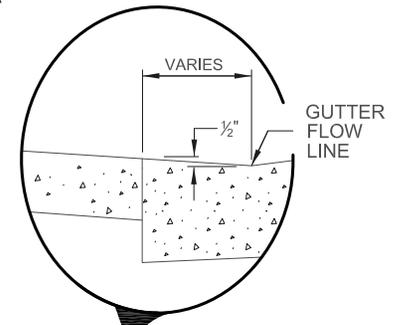
*4' MIN WHEN RESTRICTIVE CONDITIONS EXIST.

LEGEND

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NOTES:

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3. SIDEWALK SURFACE TO MATCH 1.5% SLOPE FROM TOP OF CURB.
4. DETECTABLE WARNING IS TO COMPLY WITH THE JURISDICTIONAL AGENCY'S REQUIREMENTS.
5. DISTANCE BETWEEN RAMPS MAY BE ADJUSTED TO IMPROVE CROSSING ALIGNMENT WITH OPPOSING RAMP WHEN ALLOWED BY THE JURISDICTIONAL AGENCY.
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DETAIL NO.
237-2



STANDARD DETAIL
ENGLISH

**DUAL CURB RAMP (DIRECTIONAL, 25' - 35'R)
DETACHED SIDEWALK**

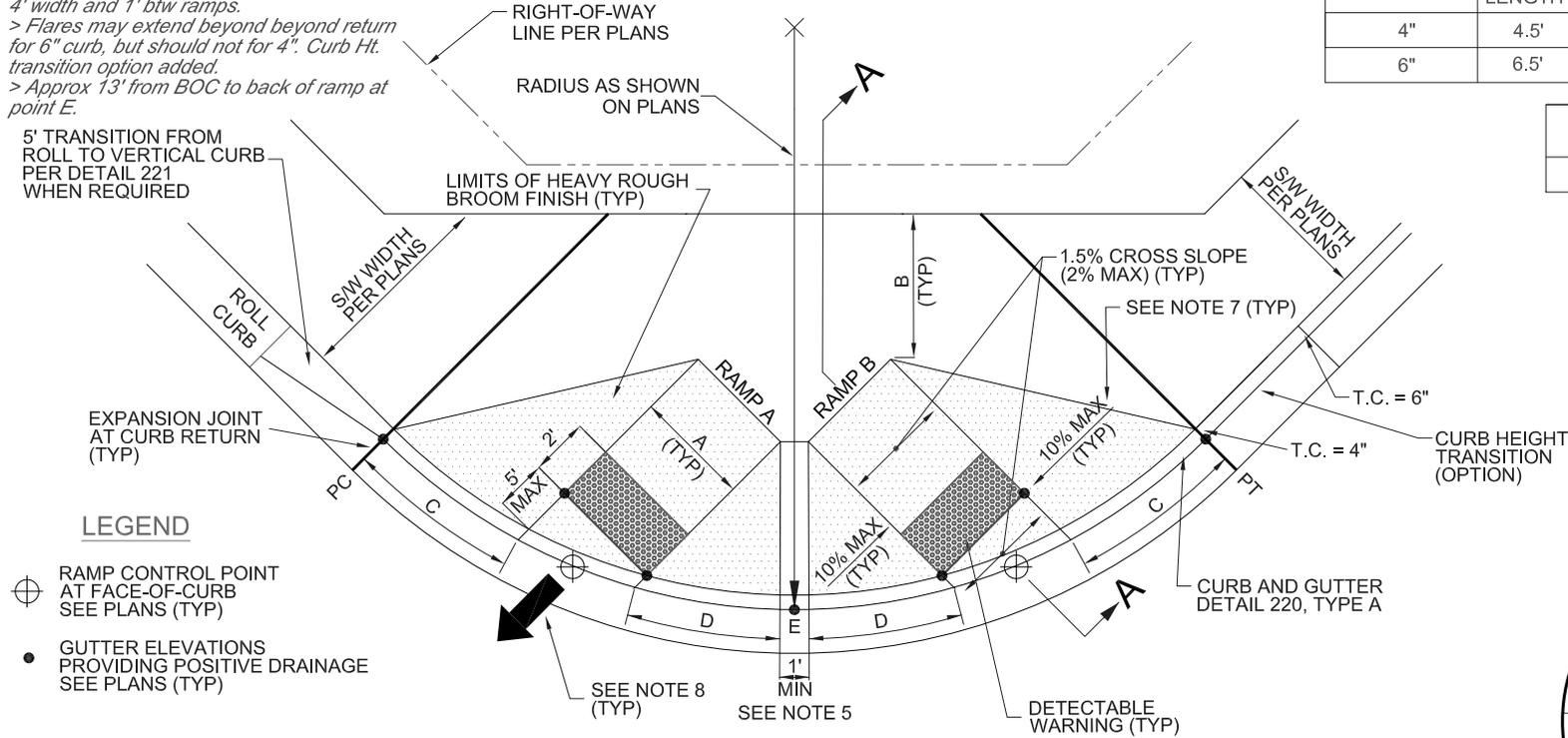
PROPOSED
01-01-2017

DETAIL NO.
237-2

DRAFT NOTES:

> 20' return with 6" curb, 6.5' ramp length, 4' width and 1' btw ramps.
 > Flares may extend beyond beyond return for 6" curb, but should not for 4". Curb Ht. transition option added.
 > Approx 13' from BOC to back of ramp at point E.

5' TRANSITION FROM ROLL TO VERTICAL CURB PER DETAIL 221 WHEN REQUIRED



CURB HEIGHT	RAMP LENGTH	WING LENGTH (C)	WING LENGTH (D)	CURB HEIGHT E (MIN)
4"	4.5'	4.5'	3.5'	3"
6"	6.5'	6.5'	4.5'	4"

CURB RAMP RADIUS (F/C)	RAMP WIDTH (A)	WALKWAY WIDTH (B)
LESS THAN 25'	4' MIN	*5' MIN

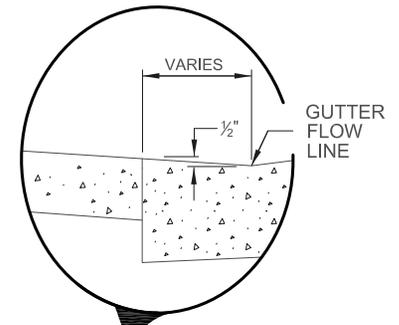
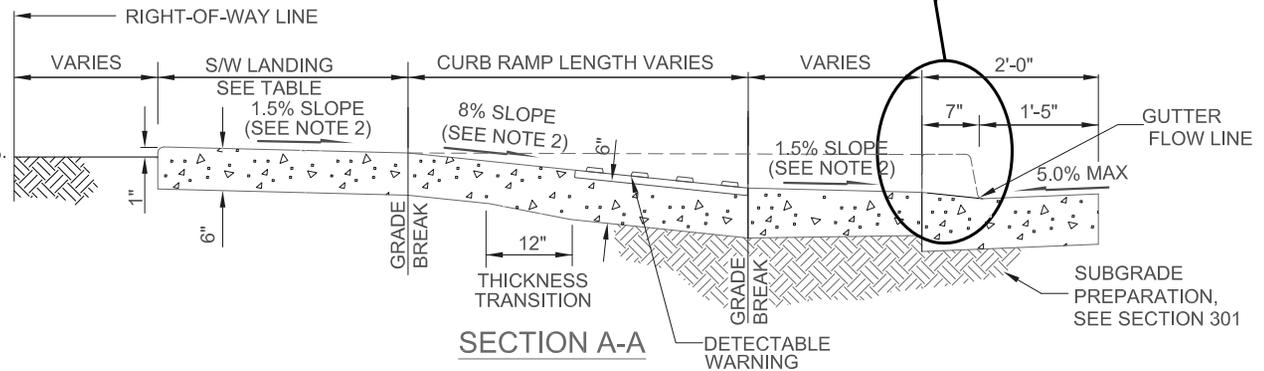
*4' MIN WHEN RESTRICTIVE CONDITIONS EXIST.

LEGEND

- ⊕ RAMP CONTROL POINT AT FACE-OF-CURB SEE PLANS (TYP)
- GUTTER ELEVATIONS PROVIDING POSITIVE DRAINAGE SEE PLANS (TYP)

NOTES:

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DETAIL NO.

237-3



STANDARD DETAIL
ENGLISH

**DUAL CURB RAMP (DIRECTIONAL, 20 'R)
ATTACHED SIDEWALK**

PROPOSED
01-01-2017

DETAIL NO.
237-3

Section 340 Concrete Curb, Gutter, Sidewalk, Curb Ramps, Driveway and Alley Entrance

340.5 MEASUREMENT:

340.5.1 Concrete Curbs and Gutters: ~~of~~The various types curb and gutter shown on the plans and in the proposal will be measured along gutter flow line through inlets, catch basins, driveways, curb ramps, etc., by the lineal foot to the nearest foot for each type, complete in place. Measurement for curb terminations and transitions shall be included with the linear measurement of the various types of curb or curb and gutter as shown on the plans and in the proposal.

Curb and gutter type shall be based on the configuration of the final exposed surfaces. The increased curb and gutter depth required at valley gutter aprons or driveways shall not be measured as a separate pay item; any additional Contractor cost shall be included in the unit cost associated with the valley gutter, driveway or other associated item.

340.5.2 Concrete Flat Work: Sidewalks, driveways, alley intersections, valley gutters and aprons will be measured to the nearest square foot complete in place.

~~Detectable warnings shall not be measured for payment. Detectable warnings are considered integral to the walking surface that they form a part of and the cost is included in the related pay item.~~

340.5.3 Curb Ramp Installations: Curb ramp installations shall be measured as complete installed units. Curbing (single curb or curb and gutter) located at the edge of roadway shall be measured and paid for separately. The surface area of curb ramps shall not be included in the measured quantity for sidewalk. Detectable warnings are an integral part of curb ramp installations and shall not be measured for payment. Detectable warnings are considered integral. Ramp curbs are an integral part of parallel curb ramp and combination curb ramp installations and shall not be measured. to the walking surface that they form a part of and the cost is included in the related pay item.

~~and shall include the ramp curb and the walking surfaces between the ramp curb and back of curb and gutter or single curb. Single curb or curb and gutter located at the edge of roadway shall be measured and paid for separately. The surface area of curb ramps shall not be included in the measured quantity for sidewalk. Curb ramps located within a curb return shall include the entire curb return area excluding the edge of roadway curbing. Curb ramp installations shall be categorized and measured by curb return radius, the number of curb ramps (one or two) contained within the return, and the type of curb ramps (perpendicular, parallel, or combination).~~

Each curb ramp not located within a curb return shall be categorized by type and measured as a complete unit. Perpendicular curb ramps shall include the area from the back of curb between the outer edges of the ramp wings to the top of the curb ramp, ending prior to and excluding the top landing. The landing area at the top of the perpendicular curb ramp is to be included in the measured sidewalk area. Parallel and combination curb ramps shall include the ramp curb and all surfaces between the ramp curb and the back edge of the roadway curbing.

340.6 PAYMENT:

Payment will be made in accordance with the unit prices ~~or lump sums~~ as set forth in the proposal. Such payment shall include full compensation for furnishing all labor, material, tools and equipment and accomplishing all work in conformance with the contract documents.

Over-excavation of soft, expansive or unsuitable materials and installation of granular materials will be paid separately and as a separate pay item, not included within the above measured pay items.

Section 340 Concrete Curb, Gutter, Sidewalk, Curb Ramps, Driveway and Alley Entrance

340.5 MEASUREMENT:

340.5.1 Concrete Curbs and Gutters: The various types curb and gutter shown on the plans and in the proposal will be measured along gutter flow line through inlets, catch basins, driveways, curb ramps, etc., by the lineal foot to the nearest foot for each type, complete in place. Measurement for curb terminations and transitions shall be included with the linear measurement of the various types of curb or curb and gutter as shown on the plans and in the proposal.

Curb and gutter type shall be based on the configuration of the final exposed surfaces. The increased curb and gutter depth required at valley gutter aprons or driveways shall not be measured as a separate pay item; any additional Contractor cost shall be included in the unit cost associated with the valley gutter, driveway or other associated item.

340.5.2 Concrete Flat Work: Sidewalks, driveways, alley intersections, valley gutters and aprons will be measured to the nearest square foot complete in place.

340.5.3 Curb Ramp Installations: Curb ramp installations shall be measured as complete installed units. Curbing (single curb or curb and gutter) located at the edge of roadway shall be measured and paid for separately. The surface area of curb ramps shall not be included in the measured quantity for sidewalk. Detectable warnings are an integral part of curb ramp installations and shall not be measured. Ramp curbs are an integral part of parallel curb ramp and combination curb ramp installations and shall not be measured.

Curb ramps located within a curb return shall include the entire curb return area excluding the edge of roadway curbing. Curb ramp installations shall be categorized and measured by curb return radius, the number of curb ramps (one or two) contained within the return, and the type of curb ramps (perpendicular, parallel, or combination).

Each curb ramp not located within a curb return shall be categorized by type and measured as a complete unit. Perpendicular curb ramps shall include the area from the back of curb between the outer edges of the ramp wings to the top of the curb ramp, ending prior to and excluding the top landing. The landing area at the top of the perpendicular curb ramp is to be included in the measured sidewalk area. Parallel and combination curb ramps shall include the ramp curb and all surfaces between the ramp curb and the back edge of the roadway curbing.

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Payment will be made in accordance with the unit prices as set forth in the proposal. Such payment shall include full compensation for furnishing all labor, material, tools and equipment and accomplishing all work in conformance with the contract documents.

Over-excavation of soft, expansive or unsuitable materials and installation of granular materials will be paid separately and not included within the above measured pay items.